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Montana Data Directory User's Manual

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Montana Data Directory

User's Manual

Preface

The development of the *Montana Data Directory* is a cooperative effort coordinated by the Montana GIS Interagency Technical Working Group. The *Montana Data Directory* is an inventory of data sources managed by participating agencies, and is designed to minimize duplication and promote sharing of digital data among the various resource management agencies and organizations within the state. The *Montana Data Directory* will be updated annually, with each participating agency sharing the responsibility for keeping records current.

The Natural Resource Information System at the Montana State Library manages the *Montana Data Directory* on behalf of the GIS Technical Working Group.

Acknowledgements

This *Montana Data Directory User's Manual* was prepared by the staff of the Natural Resource Information System at the Montana State Library. In particular, Jim Senkler, NRIS Programmer/Analyst, wrote the computer programs to operate the *Montana Data Directory*, and was largely responsible for preparing this manual.

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1.0 INTRODUCTION

1.1 Overview

The Montana Data Directory is a compilation of data sources on Montana's natural resources. The Directory is essentially a database of databases, with each complete record describing a source of data housed at various local, state, and federal agencies throughout Montana. Some data sources managed by private organizations are also included.

The purpose of this User's Manual is twofold:

1) to describe how to maintain the Data Directory - how to add, delete and change the records.

2) to describe how to use the Data Directory reports - how to search and retrieve the records, how to generate reports to serve your needs, and how to use the menu system designed to perform these functions. The Data Directory reports are completely menu-driven, with a series of menus from which you can make selections to retrieve and report information in a variety of ways.

The utilities make it possible to maintain the Directory easily without specialized knowledge of database management systems.

There are three types of records included in the Data Directory, described below, and four corresponding maintenance utilities, described in this manual:

a) Records of the **data sources**, providing full details on the theme, coverage, quality, cost, access, status, etc., of each source; this sub-division of records is referred to as Data Sources. In this manual, the **Data Sources Maintenance Utility** is described in detail in Section 3, the **Data Source Report** is described in Section 8;

   Also, because the geographic coverage or location is a vital attribute when using a data source, a separate utility has been designed to maintain information on coverage. In this manual, the **Data Sources Location Maintenance Utility** is described in Section 4;

b) Records of the **people/organizations** that manage or are responsible for the data sources, including name, addresses, phone numbers; this sub-division is referred to as Users. The **Users Maintenance Utility** is described in Section 5, the **Users Report** is described in Section 9; and

c) Records of the **projects** ongoing in Montana that have or will generate data on natural resources, including project titles, objectives, status, start/end dates, computer parameters (i.e. GIS use), and general description of study areas; this sub-division is referred to as Projects. The **Projects Maintenance Utility** is described in Section 6, the **Projects Report** is described in Section 10.

Refer to Appendix B for a complete list of the databases and their fields.

1.2 Read Me File

A file called README.DOC may be on Data Directory Disk 1. It is a text file containing last minute information not available at the time this manual was printed. The file can be viewed by entering **TYPE A:README.DOC ¦ MORE** at the DOS prompt. If you have a printer attached to your PC you can print the contents of the README file by entering **COPY A:README.DOC PRN** at the DOS prompt.

1.3 On-line Help

On-line help is available throughout the Data Directory. To view the on-line help screen, press the Help key (F1). If **More** appears at the bottom left of the help screen, use the arrow keys to scroll through succeeding screens that offer additional help.

1.4 If You Get an Error

The user software has been thoroughly tested for entry of all types of data as described in this manual. However, it is possible that some errors or bugs are still waiting to be discovered. If an error occurs, write down the message displayed on the screen and refer to Appendix D for assistance. If the error message is not explained in Appendix D, or, if the suggested remedy in Appendix D does not work, call for help (see below).

1.5 Technical Support

The Natural Resource Information System staff at the Montana State Library is prepared to provide answers to your questions on how to use the Data Directory. **Call (406) 444-5354 for assistance:**

Questions concerning the system, its use, and maintenance:
- Peter Langen, Data Technician

Questions concerning software & hardware:
- Jim Senkler, Programmer/Analyst

Questions concerning the data sources, and the contents of the Montana Data Directory:
- Allan Cox, GIS Coordinator
- Jim Stimson, Water Information Specialist
- Jon Sesso, NRIS Director

1.6 Starting the Software

If you have a menu program on your computer, calling up the software to use the Data Directory is simply a matter of making the appropriate menu selection (assuming the software has been installed to operate with the menu program). If you do not have a menu program, proceed as follows:

1) From the DOS prompt, change to the directory containing Data Directory programs.
2) To start the Data Sources Maintenance Utility, type EDDIR and press Enter.
3) To start the Data Sources Locations Maintenance Utility, type EDDIRLOC and press Enter.
4) To start the Users Maintenance Utility, type EDUSER and press Enter.
5) To start the Projects Maintenance Utility, type EDPROJ and press Enter.
6) To start the Data Sources Report, type RPDIR and press Enter.
7) To start the Users Report, type RPUSER and press Enter.
8) To start the Projects Report, type RPPROJ and press Enter.

2.0 INTRODUCTION

2.1 Function Keys

Each of the four Maintenance Utilities perform several basic functions such as saving, deleting, and finding records. For convenience, these functions have been assigned to the standard function keys on the keyboard, and provided with this documentation is a template designed for keyboards that have the Function Keys across the top. Each function and its key assignment are described below.

Exit - Escape

The Exit key is assigned to the escape key. It is used to return to the previous level of activity. If you are in the opening window of a program, the Exit key will end the program. If you are in another window, it will return you to the previous window.

Help - F1

The Help key is assigned to the F1 key. It is used to display context-sensitive help. (Note: Some early releases of the software do not have help included with them.)

Restore/Clear Record - F2

The Restore/Clear Record key is assigned to the F2 key. It is used to restore a changed window or record to its previous state, or if the window has not been changed, it will initialize the window for entering a new record.

Save Record - F3

The Save Record key is assigned to the F3 key. Whenever you create a new record or change an existing record, you must explicitly save the record to the database by pressing the Save Record key. If you are changing a field you must be sure to exit the field before saving the record.

Delete Record - F4

The Delete Record key is assigned to the F4 key. To delete a record you must first find the record (See Find Record below) and then press the Delete Record key. The program will ask you to confirm that you want to delete the record.

Find Record - F5

The Find Record key is assigned to the F5 key. To find a record, you must position the cursor in a field that is

indexed. (Indexed fields are listed in the descriptions of the programs.) Once you are in an indexed field, enter as much data as you need to find the record you are looking for. Press the Find Record key, and the program will display the first record greater than or equal to the data you entered.

Next Record - F6

The Next Record key is assigned to the F6 key. To use this function you must position the cursor in a field that is indexed. Press the Next Record key, and the program will display the first record greater than the record currently displayed.

Previous Record - F7

The Previous Record key is assigned to the F7 key. To use this function, you must position the cursor in a field that is indexed. Press the Previous Record key, and the program will display the first record less than the record currently displayed.

Select New Window - F10

The Select New Window key is assigned to the F10 key. Some programs maintain more than one database, or the database the program is maintaining has more fields than can be displayed on one screen. The Select New Window function is used to display additional windows that are used to enter the data that is not included on the Main Screen. Typically, a menu of additional windows is displayed when you press the Select New Window key. You can then select the window you wish to be displayed.

Note: These function keys are frequently mentioned in this manual and are currently assigned as described above. However, you can re-assign these functions to any key that you wish. See Appendix H to find out how to customize the Directory's programming to suit your preferences.

2.2 Navigation and Special Command Keys

Several keys are used to navigate among and within the fields on a data entry screen. The type of screen or window dictates how the navigation keys can be used.

In all main screens and some additional windows, the following keys can be used:

-- the **arrow** keys move the cursor up and down, one field at a time, or from left to right within a field.
-- the **home** and **end** keys move the cursor to the beginning or to the end within a field.

In multiple line windows, where you will learn that each line is entered and saved as a separate record, the following keys can be used:

-- the **up and down arrow** keys move the cursor up and down, one line at a time.
-- the **left and right arrow** keys move from left to right within a field.
-- the **tab** key moves the cursor to the next field, and the **shift-tab** key moves the cursor to the previous field.
-- the **home** key moves the cursor to the first field, and the **end** key moves the cursor to the last field.

There is one special command: **Ctrl-Enter, it means to press the Ctrl key and the Enter key simultaneously**. This command is frequently used in the edit/entry programs to save text entered in a free text field, and to save a list of several choices made from a look-up table.

2.3 Entering Data in a Field

A simple, but important function to always remember: Every time you enter data into a field, you must press **Enter** to store that data. Many times in this User's Manual you will be instructed to enter data and/or codes (from a look-up table) to describe a data source, a user, or a project. Remember to press **Enter** every time.

2.4 Free Text Fields

Another feature frequently mentioned in this Manual is a **free text field.** It is used for fields such as abstracts or comments, and allows you to enter as much text as desired without space restrictions.

There are two basic instructions to remember when adding or editing data in a free text field:

1. After you add/edit the field, you must press **Ctrl-Enter** to save the new text; and
2. To restore the field to its previous contents, press **Escape.**

2.5 Making Selections from Menus and Look-up Tables

All of the utility programs described in this manual make ample use of convenient menus and look-up tables to simplify data entry. When a **menu** appears on the screen (see Figure 2.1), there are two methods for making a selection:

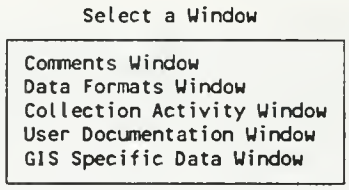


Figure 2.1. Example of a Menu

a. Use the arrow keys to position the highlight bar on the desired item and press Enter, or

b. Type the first letter of the item, which will position the highlight bar on that item, then press Enter. For items that start with the same letter, repeat the letter until the highlight bar is on your selection. For example, if the highlight bar is on the **Comments Window** and you press **C**, the highlight bar will move to **Collection Activity Window.** If you press **C** again, the highlight bar will return to **Comments Window.**

These same two methods can also be used to make a selection from a **look-up table.** As you enter data in certain fields, you will notice look-up tables appearing directly within the screen (see Figure 2.2). Look-up tables appear **whenever you press return when the field is blank, or when you enter an invalid code for the field.**

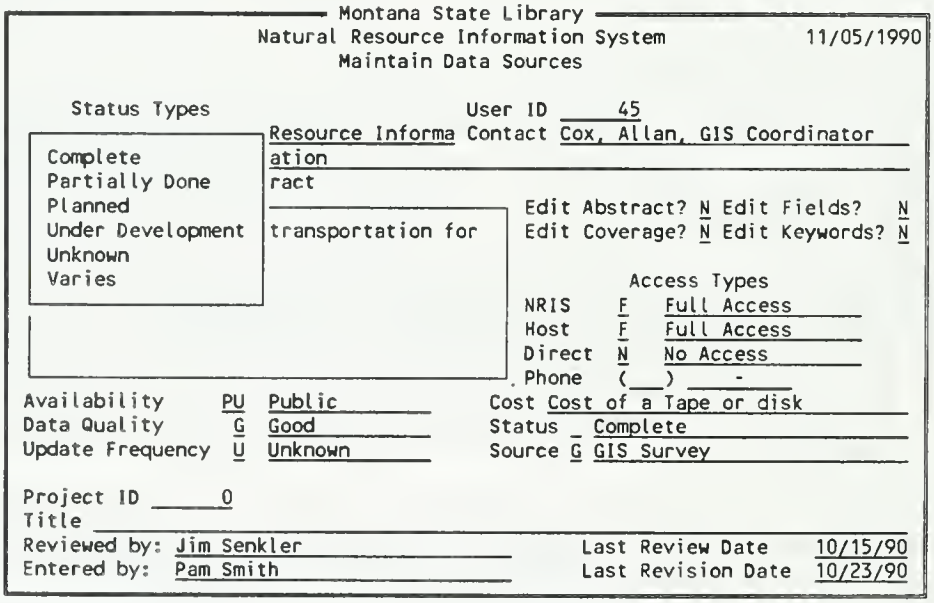


Figure 2.2 Using A Look-up Table

A look-up table allows you to select the appropriate contents (an its associated code) for a field from a set of pre-determined choices. For example, when entering information about the status of a data source (in the Data Sources

Maintenance Utility program), you will find there are six choices which appear in a look-up table (again, refer to Figure 2.2).

Using one of the two selection methods described above, your choice will automatically be entered into the corresponding fields.

2.6 Saving an Invalid Record

If you attempt to save a record to the database that has invalid data (most commonly, when a required data field is left blank), a message will appear at the bottom of the screen notifying you of the error. The error must be corrected before the record can be saved.

3.0 DATA SOURCES MAINTENANCE UTILITY

If you have a menu program on your computer, choose the Data Source Maintenance Utility. If you do not have a menu program, refer to Section 1.6 to start the program. The program will initialize and bring up the Main Screen (see Figure 3.1). The fields are blank and are ready to add a new record.

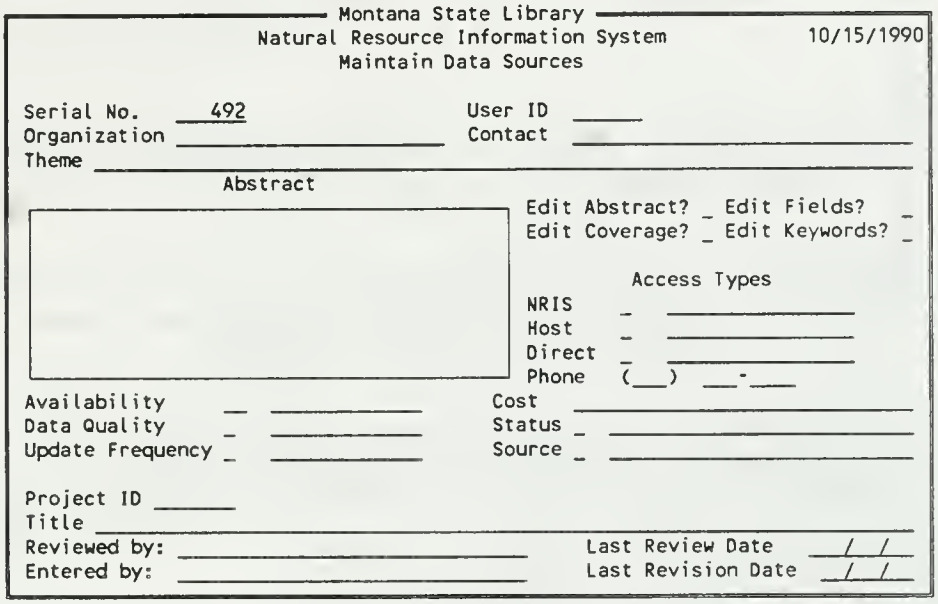


Figure 3.1. Main Screen

A complete record requires entering information in the fields displayed in the Main Screen (Figure 3.1) and in all the appropriate fields in the five additional data windows, which are displayed by pressing the Select New Window key (F10), see Figure 3.2.

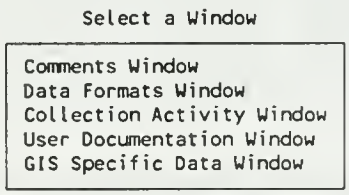


Figure 3.2. Additional Window Selections

Below are the five additional windows to fill in for each record. (Figures 3.3 - 3.7).

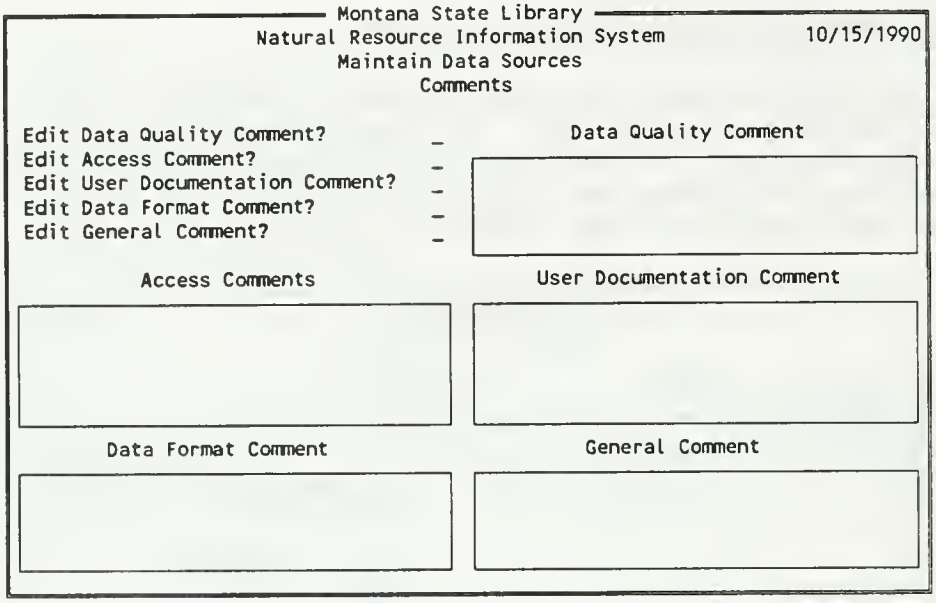


Figure 3.3. Comments Window

Data Formats

Type	Description	Media/Software & Hardware	Hardcopy?	Digital?

Figure 3.4. Data Formats Window

Collection Activity

Collection Agency	Begin Date	End Date	Collection Comment
	/ /	/ /	
	/ /	/ /	
	/ /	/ /	

Figure 3.5. Collection Activity Window

User Documentation

Description	Type		Quality	

Figure 3.6. User Documentation Window

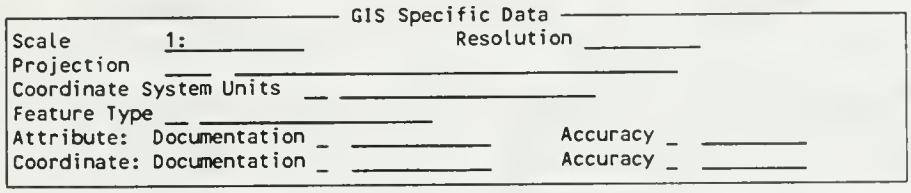


Figure 3.7. GIS Specific Data Window

3.1 Adding a Record

In this section is an example of how to add a complete record, explaining each field in each window. The example is a data source of hydrography for Silver Bow County. The first thing to do is fill out the Main Screen (Figure 3.8).

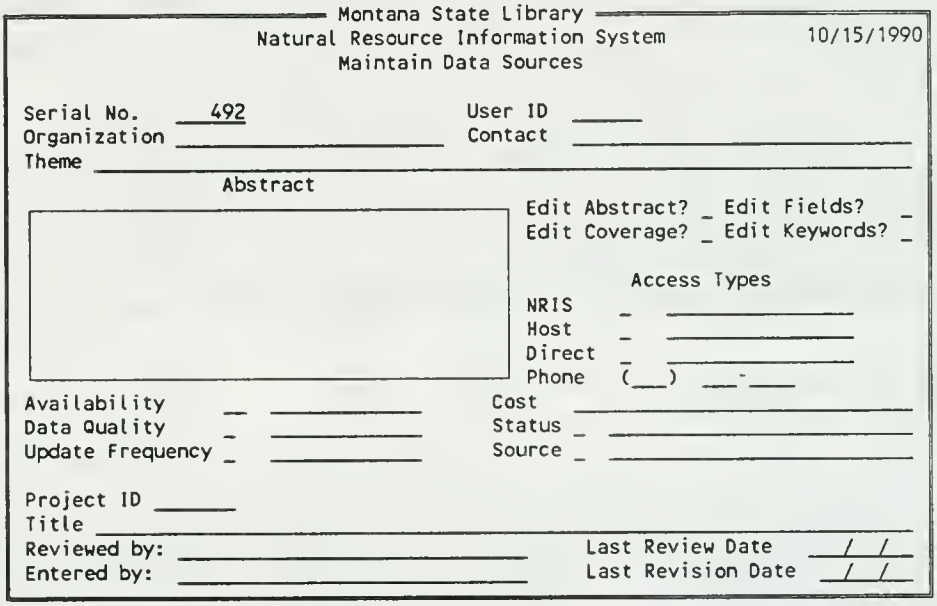


Figure 3.8. Main Screen

3.1.1 Main Screen

Serial No: This field is maintained automatically by the program. In our example, and whenever you **add** a new record, the program automatically displays the next available number.

User ID: Enter a valid User ID. For this example, enter your User ID. User IDs are generated by the Users Maintenance program. (See Section 5.0 of this manual).

If your name has not been added to the User Database, you will need to exit from this program, run the Edit Users Maintenance program, and add your name as a user.

If you do not know your User ID, see Appendix E. The User ID will be the same for all data sources you add.

Organization & Contact: These fields display the User's organization and contact information. Once the User ID is input, these fields are filled in automatically.

Theme: Enter the theme of the data source. For this example, enter **Hydrography.**

Abstract, Coverage, Fields, and Keywords: These fields are free text fields (See Section 2.4). To access these fields, type a **Y** in the corresponding **Edit** field, and press **ENTER.** Data for these four fields are entered in the same area in the window but are maintained separately.

QUICK TIP!

There are two basic instructions to remember when adding or editing data in a free text field:

1. After you add/edit a field, you must press **Ctrl-Enter** (press Ctrl and Enter simultaneously) to save the new text; and
2. To restore the field to its previous contents, press **Escape.**

Edit Abstract?: When the cursor is positioned in this field the current abstract will appear in the window to the left. Enter a **Y** in this field and press enter; the cursor will be positioned in the free text field and you can enter an abstract regarding the data source. For this example, enter **1:24,000 hydrography of Butte obtained from the USGS DLG map series; acquired in 1988 for Superfund work; enhanced significantly since 1988.**

Edit Coverage?: When the cursor is positioned in this field the current coverage will appear in the window to the left. Enter a **Y** in this field and press enter; the cursor will be positioned in the free text field and you can enter a written description of the coverage of the data source. For this example, enter **Northern two-thirds of Silver Bow county; the Butte North quadrangle.**

Edit Fields?: When the cursor is positioned in this field the current data source fields will appear in the window to the left. Enter a **Y** and press enter; the cursor will be positioned in the free text field and you can enter the fields of the data source. For this example, enter **reach name; reach no; length**
Remember to separate each field name by a semicolon.

Edit Keywords?: When the cursor is positioned in this field the current list of keywords will appear in the window to the left. Type a **Y** and press enter; the cursor will be positioned in the free text field and you can enter a list of keywords for the data source. For this example, enter **water; hydrography; Silver Bow; etc. Remember to separate each keyword by a semicolon.**

Access Types: The next set of fields concerns access to the data:

NRIS refers to the access that NRIS has to the data;

Host refers to the access that the host agency has to the data;

Direct refers to dial-up access from another computer.

For each data source you need to enter valid access type codes for **NRIS**, **Host** and **Direct**. These fields use the same look-up table; the choices are:

F - Full Access
L - Limited Access
N - No Access
U - Unknown
V - Varies

For this example, select **No Access** for **NRIS**, **Full Access** for **Host**, and **No Access** for **Direct.** With the look-up table on the screen, highlight the appropriate selection and press Enter. The codes and their corresponding descriptions will be directly inserted into the appropriate fields.

QUICK TIP!
If you know the code for your selection, simply enter that code into the field and the description will be displayed automatically.

Phone: If you choose the codes Full or Limited for the Direct Access field, the cursor is positioned in the **Phone** fields allowing you to enter an area code and phone number for dial-up access to the data source.

Availability: This field uses a look-up table. The valid availability codes are:

CO - Confidential
NA - Not Available
PR - Private
PU - Public
UN - Unknown
VA - Varies

For this example, select **Public**. With the look-up table on screen, highlight **Public** and press enter. The code, **PU**, and its description, **Public**, will be directly inserted into the appropriate fields.

Cost: Enter a description of any charges for non-host agency use of the data source. Although the displayed field is only 31 characters wide, you can enter up to 50 characters. For this example, leave the field empty by pressing Enter.

Data Quality: This field uses a look-up table. The valid data quality codes are:

E - Excellent
F - Fair
G - Good
P - Poor
U - Unknown
V - Varies

For this example, select **Good**. With the look-up table on screen, highlight **Good** and press enter. The code, **G**, and its description, **Good**, will be inserted directly into the appropriate fields.

Status: This field uses a look-up table. The valid status codes are:

C - Complete
D - Under Development
I - Partially Done
P - Planned
U - Unknown
V - Varies

For this example, select **Complete**. With the look-up table on screen, highlight **Complete** and press enter. The code, **C**, and its description, **Complete**, will be inserted directly into the appropriate fields.

Update Frequency: This field uses a look-up table. The valid update frequency codes are:

A - Annual
F - Frequent
N - Not Updated
S - Semi-Annual
U - Unknown
V - Varies
X - Sporadic

For this example, select **Varies**. With the look-up table on screen, highlight **Varies** and press enter. The code, **V**, and its description, **Varies**, will be inserted directly into the appropriate fields.

Source: This field uses a look-up table. The valid source codes are:

G - GIS Survey
N - NRIS
U - User Update
W - WIS Survey

For this example, select **User Update**. With the look-up table on screen, highlight **User Update** and press enter. The code, **U**, and its description, **User Update**, will be inserted directly into the appropriate fields.

QUICK TIP!
As mentioned in section 1.2.7, the look-up tables will appear whenever the corresponding field is blank and you press enter, or when an invalid code is entered.

Project ID: This field provides the opportunity to relate a data source with the specific project that led to the acquisition or generation of the data source. If the data source being entered is associated with a project and you have entered the project in the Projects database, you can enter the Project ID here. If you do not know the Project ID, see Appendix F. For more information about the Projects database, turn to Section 6.0.

Project Title: The project title is filled in automatically when a valid project ID is entered.

Reviewed by & Last Review Date: This field is designed for editing records. (See section 3.2). Since you are entering a new record, do not enter these fields.

Entered by: Enter your name. This field defaults to the last name entered. Your name will become the new default.

Last Revision Date: This field is maintained automatically by the program.

Now you have completed the Main Screen. To fully complete a record, however, you should continue, and add information in each of five additional windows.

3.1.2 Selecting Additional Windows

To enter data into the five additional windows, press the Select New Window key (F10). The menu shown in Figure 3.2 will be displayed and a new window can be selected.

QUICK TIP!
The cursor can be anywhere in the Main Window when you press the Select Window Key (F10).

Note: If you select any of the five additional windows other than the Comments Window, and if any changes have been made in the Main Screen, the program will ask if you want to save the Data Sources record. If you press **N**, the program will return to the Main Screen. If you press **Y**, the record, with changes, is saved and the new window is displayed.

When you have completed data entry in a new window and have saved each record, (see above), press either the Exit key (Escape) or the Select New Window key (F10). Pressing the Exit key returns you to the Main Screen. Pressing the Select New Window key brings up the Select New Window menu again (Figure 3.2).

3.1.3 Comments Window

After pressing the Select New Window key (F10), select the Comments Window from the menu; the window shown in Figure 3.9 will appear.

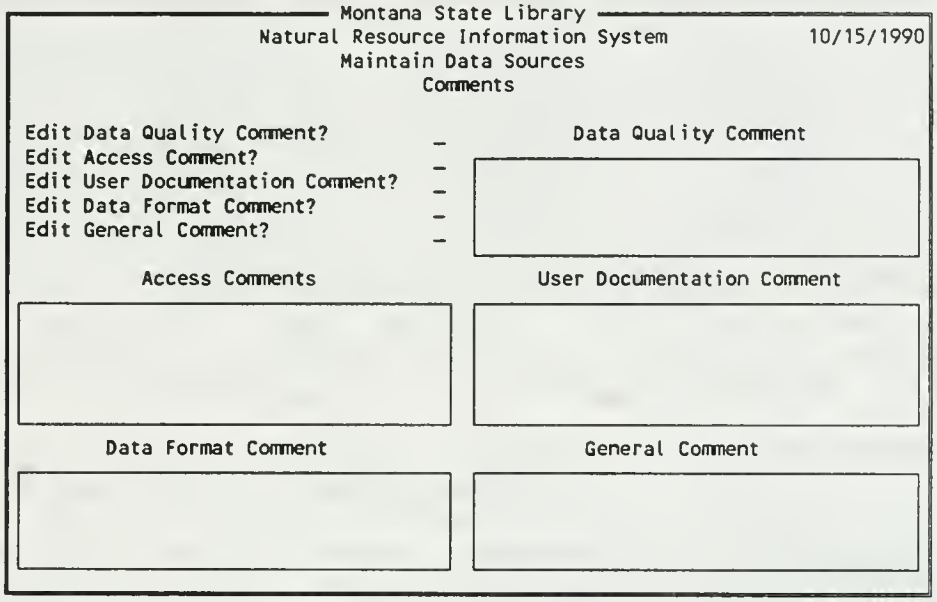


Figure 3.9. Comments Window

To record additional comments about the data source, such as extra details about data quality, access, user documentation, data formats or any other general comments, enter **Y** in the corresponding **Edit** field and press enter; the cursor will be positioned in the corresponding free text field, and you can enter your comments.

When you are finished with the Comments Window, press the Exit key (Escape) to return to the Main Screen.

3.1.4 Data Formats Window

Press the Select New Window key (F10), and select the Data Formats Window from the menu; the window shown in Figure 3.10 will appear. There are four fields for entry in this window:

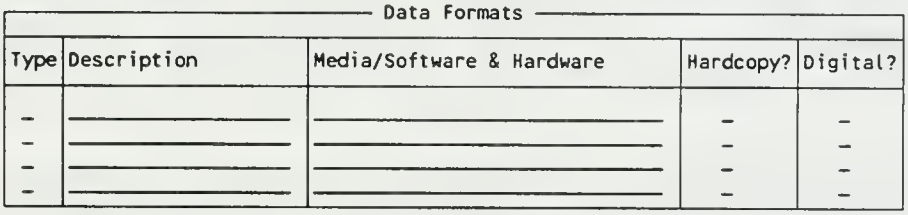


Figure 3.10. Data Formats Window

Type: This field uses a look-up table. The valid data format type codes are:

D - Tabular Database
I - Image
M - Map
T - Text
U - Unknown

For this example, select **Tabular Database.** With the look-up table on screen, highlight **Tabular Database** and press enter. The code, **D**, and its description, **Tabular Database**, will be directly inserted in the appropriate fields.

Media/Software & Hardware: Press enter to move the cursor to the next field, **Media/Software & Hardware.** Enter a brief description of the media on which the data resides or the software and hardware which is used with the data. Although the displayed field is only 31 characters wide, you can enter up to 76 characters. For this example, enter **ARC/INFO coverage.**

Hardcopy?: If the data format exists in hardcopy format, enter **Y**; otherwise, enter **N.** For this example, enter **N.**

Digital?: If the data format exists in digital format, enter **Y**; otherwise, enter **N.** For this example, enter **Y.**

When you have finished entering the information across the first line, you must press the Save Record key (F3) to save the record to the database. If you press the Exit key or the Select New Window key before saving the record, the data you entered will be lost. If you inadvertently do this, select the window again and re-enter the data.

After you have saved the first data format, the cursor will be in the second row ready to enter another data format (See figure 3.11). For our example, enter a second format. Enter **M** for the **Type**, enter **1:24,000 USGS map** for the **Media/Software & Hardware** field, enter **Y** for **Hardcopy?**, and enter **N** for **Digital?**. Save the record by pressing the Save Record Key (F3).

Data Formats

Type	Description	Media/Software & Hardware	Hardcopy?	Digital?
D	Tabular Database	ARC/INFO coverage	N	Y

Figure 3.11. Data Formats Window

QUICK TIP!
In multiple line windows, you can use the navigation keys described in Section 1.2.4 to move around the fields in the records you have entered. Press either the Save Record key (F3) or the Restore/Clear Record key (F2) when you are ready to enter a new record.

When you are finished with the Data Formats Window, press the Exit key (Escape) to return to the Main Screen.

3.1.5 Collection Activity Window

Press the Select New Window key (F10), and select the Collection Activity Window from the menu; the window shown in Figure 3.12 will appear. There are four fields for entry in this window:

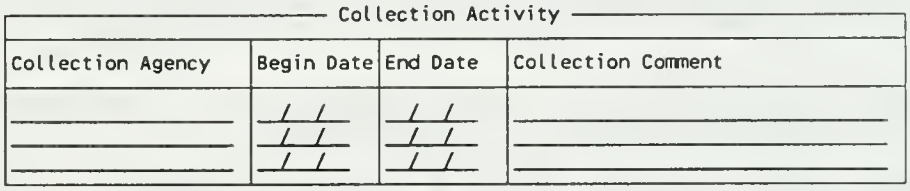


Figure 3.12. Collection Activity Window

Collection Agency: Enter the name of the collection agency. Although the displayed field is only 20 characters wide, you can enter up to 50 characters. For this example, enter **Horizon Data Corporation.**

Begin & End Dates: Enter beginning and ending dates for the collection activity. For the first example, enter **09/01/85** for the **Begin Date** and **12/31/88** for the **End Date.**

Comment: When you enter this field, a free text window appears. Enter any additional comments you wish to make about the collection activity.

Remember, when you have finished entering the information across the first line, you must press the Save Record key (F3) to save the record to the database.

When you are finished with the Collection Activity Window, press the Exit key (Escape) to return to the Main Screen.

3.1.6 User Documentation Window

User Documentation need only be entered for data sources that have associated interactive software that allow the user access to the data source. For example, the Montana Rivers Information System, a widely-used data source, comes with a report utility for data output. This window allows you to enter descriptive information about the documentation provided with software used with a data source. For our example, there is no user documentation but a description of the fields is included below.

Press the Select New Window key (F10), and select the User Documentation Window from the menu; the window shown in Figure 3.13 will appear. There are three fields for entry:

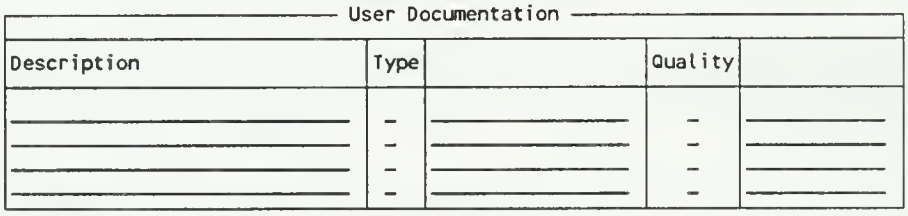


Figure 3.13. User Documentation Window

Description: Enter a brief description of the documentation such as **Users Manual** or **Online Help**.

Type: This field uses a look-up table. The valid documentation type codes are:

B - Manual and Online
M - Manual
O - Online
T - Tutorial
U - Unknown
V - Varies

After you make a selection, the code and its description will be directly inserted in the appropriate fields.

Quality: This field uses a look-up table. The valid documentation quality codes are:

E - Excellent
F - Fair
G - Good
P - Poor
U - Unknown
V - Varies

After you make a selection, the code and its description will be directly inserted in the appropriate fields.

Remember to press the Save Record key (F3) to save the record to the database.

When you are finished with this window, press the Exit key (Escape) to return to the Main Screen.

3.1.7 GIS Specific Data Window

GIS Specific Data should be entered for data sources that have GIS attributes. Press the Select New Window key (F10), and select the GIS Specific Data Window from the menu; the window shown in Figure 3.14 will appear.

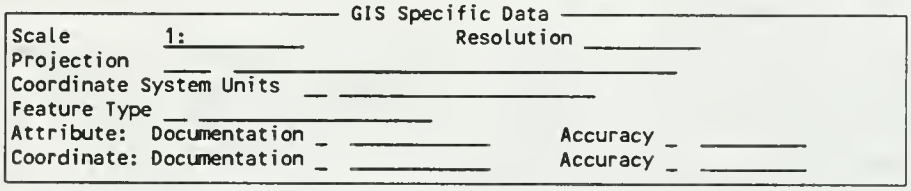


Figure 3.14. GIS Specific Data Window

Scale & Resolution: Enter the scale or the resolution of the data source. For our example, enter **1:24,000** in the **Scale** field.

Projection: This field uses a look-up table. Since there are many projection codes, the quickest method for entering this information is to press enter with a blank field. This will cause the look-up table to be displayed.

For this example, select **State Plane South.** With the look-up table on screen, highlight **State Plane South** and press enter. The code, **S3**, and its description, **State Plane South**, will be inserted directly into the appropriate fields.

Coordinate System Units: This field uses a look-up table. The valid units codes are:

DD - Decimal Degrees
DG - Degrees
FT - Feet
IN - Inches
M - Meters
TR - Township Range Section
U - Unknown
V - Varies

For this example, select **Meters.** With the look-up table on screen, highlight **Meters** and press enter. The code, **M**, and its description, **Meters**, will be inserted directly into the appropriate fields.

Feature Type: This field uses a look-up table. The valid feature type codes are:

AP - Arc & Polygon
AR - Arc
GR - Grid
LA - Label
NE - Network
P3 - Point, Arc & Polygon
PA - Point & Arc
PP - Point & Polygon
PT - Point
UN - Unknown
VA - Varies

For this example, select **Point, Arc & Polygon**. With the look-up table on screen, highlight **Point, Arc & Polygon** and press enter. The code, **P3**, and its description, **Point, Arc & Polygon**, will be inserted directly into the appropriate fields.

Attribute Documentation: This field uses a look-up table. The valid attribute documentation codes are:

E - Extensive
I - Intermediate
N - Negligible
U - Unknown
V - Varies

For this example, select **Negligible**. With the look-up table on screen, highlight **Negligible** and press enter. The code, **N**, and its description, **Negligible**, will be inserted directly into the appropriate fields.

Attribute Accuracy: This field uses a look-up table. The valid attribute accuracy codes are:

E - Excellent
F - Fair
G - Good
P - Poor
U - Unknown
V - Varies

For this example, select **Unknown**. With the look-up table on screen, highlight **Unknown** and press enter. The code, **U**, and its description, **Unknown**, will be inserted directly into the appropriate fields.

Coordinate Documentation: This field uses a look-up table. The valid coordinate documentation codes are:

E - Extensive
I - Intermediate
N - Negligible
U - Unknown
V - Varies

For this example, select **Extensive**. With the look-up table on screen, highlight **Extensive** and press enter. The code, **E**, and its description, **Extensive**, will be inserted directly into the appropriate fields.

Coordinate Accuracy: This field uses a look-up table. The valid coordinate accuracy codes are:

E - Excellent
F - Fair
G - Good
P - Poor
U - Unknown
V - Varies

For this example, select **Excellent**. With the look-up table on screen, highlight **Excellent** and press enter. The code, **E**, and its description, **Excellent**, will be inserted directly into the appropriate fields.

Remember, when you have finished entering the information in this window, you must press the Save Record key (F3) to save the record to the database.

After you save a record the program will return to the Main Screen.

At this point, you have gone through the Main Screen and the five additional windows, and you have entered a complete record for a data source. The next section explains how to change/edit a record once it has been entered.

3.2 Editing a Record

Once a record is entered, you may need to make some changes. The first step is to find the record to be edited. Position the cursor in any of the fields that are indexed; in the Main Screen, the **Serial No.**, **User Id**, and **Project ID** fields are indexed. For our example, we will edit Serial No. 157.

Enter **157** in the **User ID** field. Press the Find Record key (F5). The screen shown in figure 3.15 will appear.

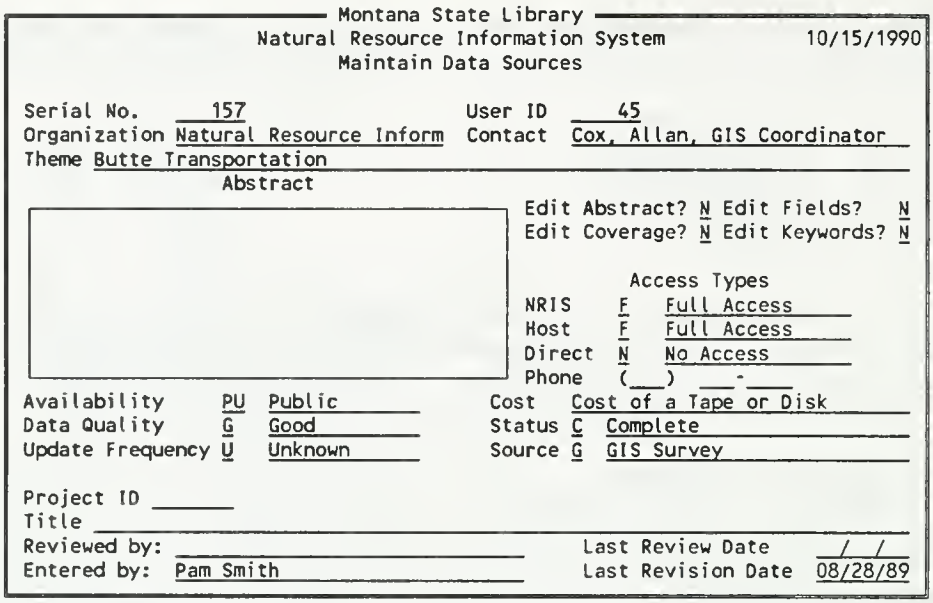


Figure 3.15. Updating Main Screen

If you did not know the **Serial No.** but did know the **User ID**, you could have entered **45** in the **User ID** field and pressed the Find Record key (F5). The record that would have been displayed would be the first record found with **User ID** 45. You could have then pressed the Next Record key (F6) until you the record you wanted was displayed.

3.2.1 Editing the Main Screen

Continuing with our example, enter an **Abstract** for this data source, change the **Update Frequency**, and add a Collection Activity record. Also, because the record is being updated, enter the **Reviewed By** and **Last Review Date** fields.

Move the cursor to the **Edit Abstract?** using the up and down arrow keys. Enter **Y**. Enter **ARC/INFO coverage of transportation for Butte** in the free text field. Press **Ctrl-Enter** to save the text.

Move the cursor to the **Update Frequency** field. Press the space bar to erase the code, **U**, and then press **Enter**, which displays the look-up table. Press **V** and the highlight bar will move to **Varies**. Press enter, and **V** and **Varies** will be directly inserted into the appropriate fields.

Since a record is being changed, move the cursor to the **Reviewed by** field, and enter your name. Move the cursor to the **Last Review Date** field, and enter the date.

If you do not like the changes you have made, press the Restore/Clear Record key (F2), and the original record will be

displayed. Press the Restore/Clear Record key again and a blank record will be displayed ready to add a new record.

If these were the only changes you were going to make, it would be necessary to press the Save Record key (F3) to save the changes. If you press the Exit key (Escape), you will be asked if you want to save the changed record.

3.2.2 Editing Other Windows

To edit data in the additional windows for a data source record, press the Select New Window key (F10). The menu in Figure 3.2 will be displayed, and you can select a new window. Remember, if you select any window other than the Comments Window and if any changes have been made in the Main Screen, the program will ask you if you want to save the Data Sources record. If you press **N**, the program will return you to the Main Screen. If you press **Y**, the new window is displayed.

QUICK TIP!
When you have completed entering data in the new window (including saving), press either the Exit key (Escape) or the Select New Window key (F10). Pressing the Exit key returns you to the Main Window. Pressing the Select New Window key brings up the Select New Window menu again.

3.2.3 Editing the Collection Activity Window

Select the Collection Activity Window from the Select New Window menu and the window in Figure 3.16 will appear.

Collection Activity

Collection Agency	Begin Date	End Date	Collection Comment
EPA, Environmental P	01/01/1987	12/31/1987	
	/ /	/ /	
	/ /	/ /	

Figure 3.16. Editing the Collection Activity Window

For an example, we will add a new Collection Activity record. Press the Restore/Clear Record key (F2). The cursor will be positioned in the second row ready to enter a new record. Enter **Silver Bow Dept. of Transportation** in the **Collection Agency** field and **01/01/1990 - 09/30/1990** in the date fields. After entering the **End Date** a free text window

will appear to enter a **Collection Comment.** In our example, we have no comment, so press the Exit key (Escape).

Remember, press the Save Record key (F3) to save the record to the database.

When you are finished making changes to this window, press the Exit key (Escape) to return to the Main Screen.

You can edit any of the five additional window using these same procedures.

3.3 Deleting a Record

You can delete a data source record and all of its related data. First, find the record as described in Section 3.2, Editing a Record; then, press the Delete Record key (F4). The program will ask you to confirm that you actually want to delete the record. Press **Y** to delete the record; otherwise, press **N**.

If you want to delete a record from one of the additional windows only, press the Select New Window key (F10) and select the appropriate window. (Note: The Comments Window data is deleted automatically when you delete a Data Source record.)

If you selected the GIS Specific Data window, the GIS Specific Data record will be displayed. Press the Delete Record key (F4) and the program will ask you to confirm that you actually want to delete the record. Press **Y** to delete the record otherwise press **N**.

If you selected any other window, use the up and down arrow keys to position the cursor in the row of the record you want deleted. Press the Delete Record key (F4) and the program will ask you to confirm that you actually want to delete the record. Press **Y** to delete the record; otherwise, press **N**.

Press the Exit key (Escape) or Select New Window key (F10) to return to the Main Screen or select another window.

3.4 Exiting the Program

From the Main Screen, press the Exit key (Escape) to end the program.

4.0 DATA SOURCES LOCATION MAINTENANCE UTILITY

If you have a menu program on your computer, choose the Data Sources Location Maintenance Utility. If you do not have a menu program, refer to Section 1.6 to start the program. The program will initialize and bring up the Main Screen (see Figure 4.1). The fields are blank and are ready to add a new record.

As described in Section 1.1, the geographic coverage or location of a data source is a vital attribute, and most data users have indicated a strong desire to search for data sources (in the Directory) by coverage. Therefore, this separate utility has been designed to maintain information on coverage. The data you enter about the coverage of a data source must be as accurate and complete as possible, thus ensuring that searches using the spatial attribute are correct and constructive.

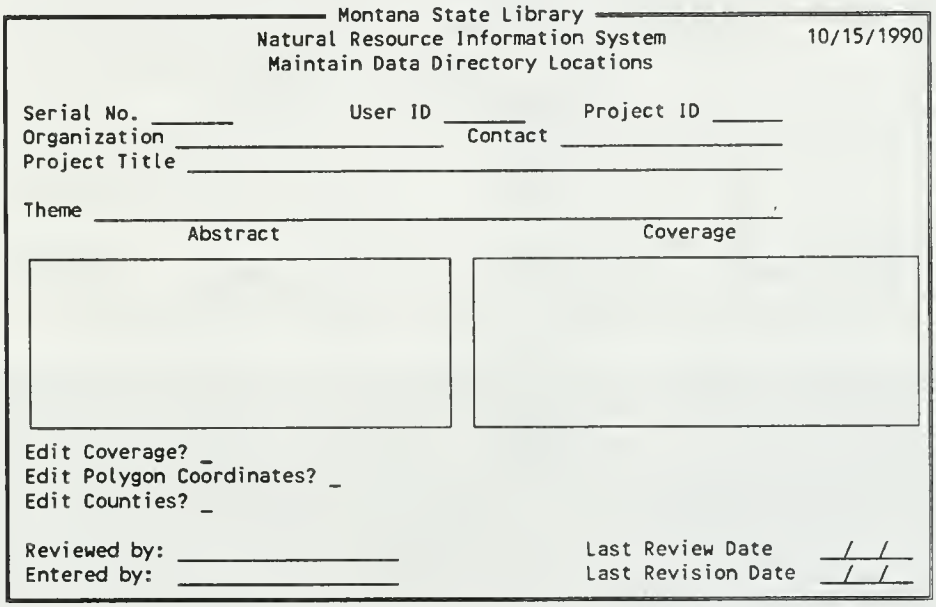


Figure 4.1. Main Screen

A complete record in this database requires entering information in the fields displayed in the Main Screen (Figure 4.1) and in all the appropriate fields in the two additional data windows, which are displayed by pressing the Select New Window key (F10) (see Figure 4.2).

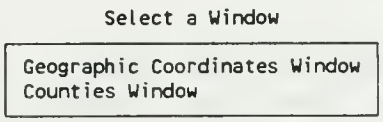


Figure 4.2. Additional Window Selections

Below are the two (2) additional windows to fill in for each record. (Figures 4.3 - 4.4).

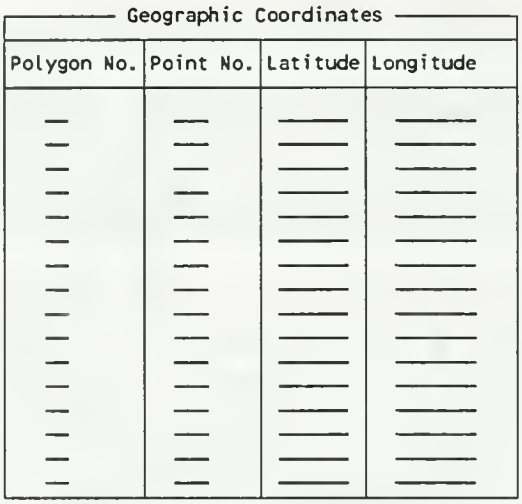


Figure 4.3. Geographic Coordinates Window

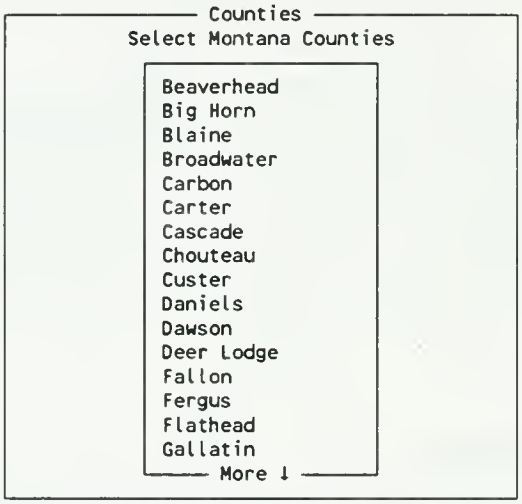


Figure 4.4. Counties Window

4.1 Adding a Record

This program does not allow you to add any additional Data Source records. It only allows you to add and change coordinate information for existing data sources.

4.2 Editing a Record

In this section we describe an example of how to edit the location information for the data source record we added in Section 3.0.

The first step is to find the record to be edited. Position the cursor in any of the fields that are indexed; **Serial No.**,

User Id, or **Project ID**. For our example, you can do one of two things:

1) Since the data source you added in our example in Section 3.0. is the last record in the database, position the cursor in the **Serial No.** field and press the Previous Record key (F7); or
2) Enter **492** in the **Serial No.** field. Press the Find Record key (F5). The screen shown in figure 4.5 will appear.

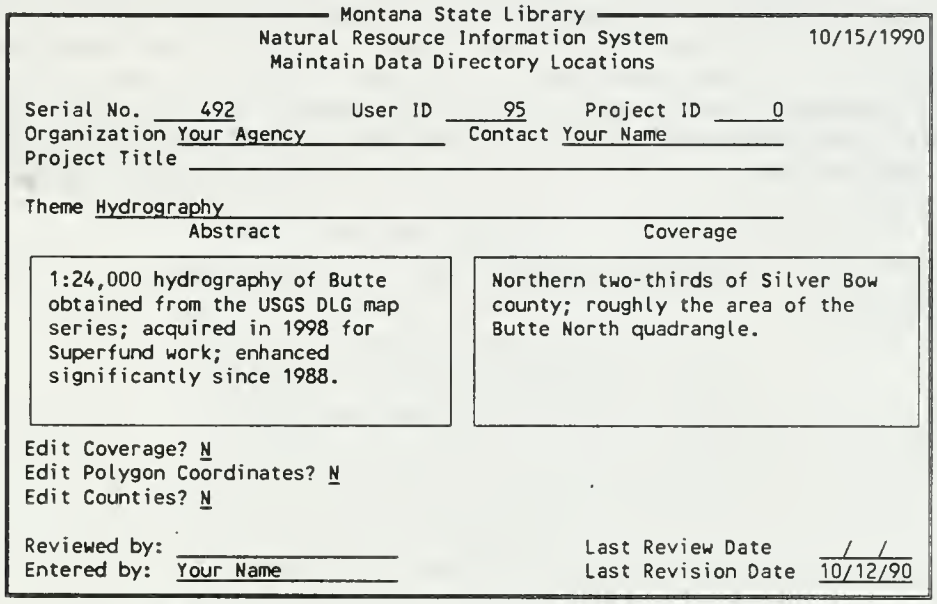

Montana State Library
Natural Resource Information System
Maintain Data Directory Locations
10/15/1990
Serial No. 492
User ID 95
Project ID 0
Organization Your Agency
Contact Your Name
Project Title
Theme Hydrography
Abstract
Coverage
1:24,000 hydrography of Butte obtained from the USGS DLG map series; acquired in 1998 for Superfund work; enhanced significantly since 1988.
Northern two-thirds of Silver Bow county; roughly the area of the Butte North quadrangle.
Edit Coverage? N
Edit Polygon Coordinates? N
Edit Counties? N
Reviewed by:
Entered by: Your Name
Last Review Date / /
Last Revision Date 10/12/90

Figure 4.5. Main Screen ready for editing

QUICK TIP!

If you did not know the **Serial No.** but did know the **User ID**, you could have entered **95** (your User ID) in the **User ID** field and pressed the Find Record key (F5). The record that would have been displayed would be the first record found with **User ID** 95. You could have then pressed the Next Record key (F6) until the data source record you wanted was displayed.

For this example, we will change the coverage, and add coordinates and counties for the data source.

4.2.1 Editing the Coverage

Move the cursor to the **Edit Coverage?** field. Enter **Y**. Change the coverage to read: **Northern two-thirds of Silver Bow County; roughly the Butte North quadrangle including the City of Butte.** Press **Ctrl-Enter** to save the text.

4.2.2 Editing Polygon Coordinates

To add or change coordinates you can either position the cursor in the **Edit Polygon Coordinates?** field and enter **Y**; or press the Select New Window key and select **Geographic Coordinates.**

A convenient feature of this program allows you to copy coordinates from another data source, which can be useful if you are entering a data source that has coordinates that are identical or close to a data source that you have previously entered. The program will ask you if you want to copy coordinates; enter **Y** if you want to copy coordinates; otherwise, enter **N.** If you enter **Y** the program asks you for the Serial No. of the data source whose coordinates you want to copy.

For our example, enter **N.** The window in Figure 4.6 appears.

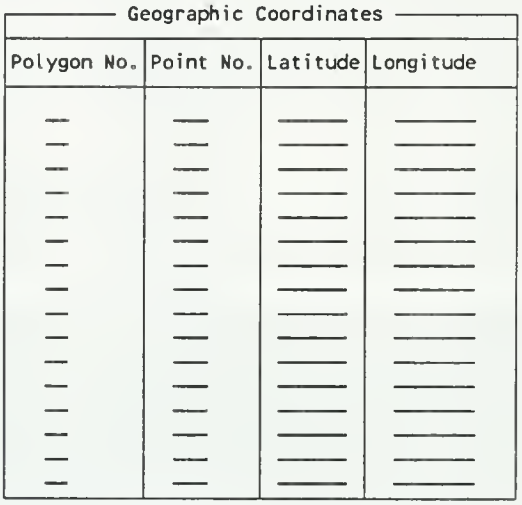


Figure 4.6. Geographic Coordinates Window

You can enter as many polygons (they do not have to be rectangular) as you need to define the coverage. For our example, we will enter two polygons one with five coordinates and one triangular. The coordinates for a polygon must be entered sequentially in clockwise order.

Polygon No.: Enter the polygon number. For this example, enter **1.**

Point No.: Enter the point number. For this example, enter **1.**

Latitude: Enter the latitude of the coordinate. For this example enter **46.**

Longitude: Enter the longitude of the coordinate. For this example enter **113**.

Similar to the multiple line windows of the Data Source Maintenance Utility, when you have finished entering the information across the first line, you must press the Save Record key (F3) to save the record to the database. If you press the Exit key or the Select New Window key before saving the record, the data you entered will be lost. If you inadvertently do this, select the window again and re-enter the data.

After you have saved the first coordinate, the cursor will be in the second row, ready to enter another coordinate. (See Figure 4.7).

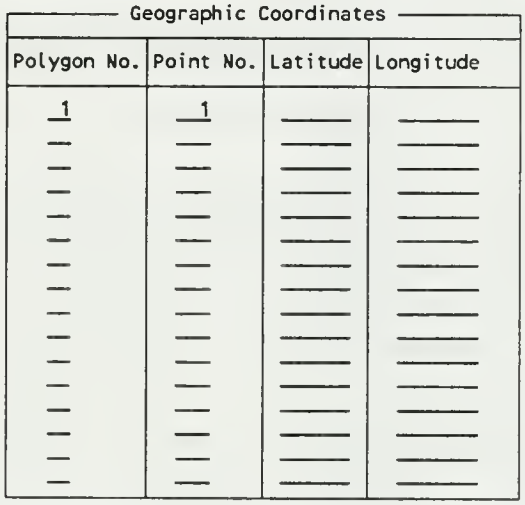


Figure 4.7. Geographic Coordinates Window (after the first line is entered).

For our example, enter the following set of data, being sure to save the record after entering each line.

Polygon	Point	Latitude	Longitude
1	2	46	11230
1	3	4615	11230
1	4	461530	11245
1	5	4615	113
2	1	4555	1131030
2	2	46	11330
2	3	4610	11355

You can use the navigation keys (up and down arrow, page up, page down, home and end keys) on or near the numeric keypad and the tab and shift-tab keys to move around the fields in the records you have entered. Press either the Save Record key (F3) or the Restore/Clear Record key (F2) when you are ready to enter a new record.

Press the Exit key (Escape) to return to the Main Screen.

4.2.3 Editing Counties

To edit counties you can either position the cursor in the **Edit Counties?** field and enter **Y**; or press the Select New Window key and select **Counties Window.** The window in Figure 4.8 will appear.

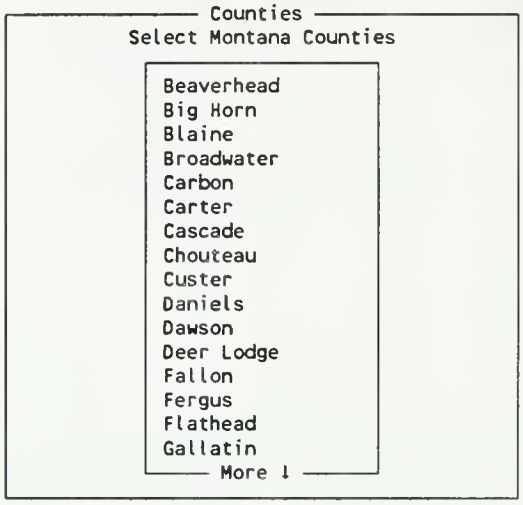


Figure 4.8. Counties Window

This window allows you to select one or more counties. Select a county by using the up and down arrow keys to position the highlight bar on the desired county, and press **Enter**; or type the first letter of the county, which will position the highlight bar on the next county beginning with that letter, then press **Enter.** Note: For counties that start with same letter, repeat the letter until the highlight bar is on the correct county.

When you press enter, an arrow appears next to the county you have selected. To unselect a county, position the highlight bar over the county, and press **Enter** a second time; the arrow will be removed.

For our example, select **Ravalli** and **Silver Bow.** Press **Ctrl-Enter** to record your selections in the database. You will be returned to the Main Screen.

4.3 Deleting a Record

You cannot delete a data source record from this program. You can, however, delete coordinates and counties.

First, find the record as described in Section 4.2.

To delete coordinates, press the Select New Window key (F10) and select the **Geographic Coordinates Window**. Enter **N** when the program asks if you want to copy coordinates. Using the up and down arrow keys, position the cursor in the row of the coordinates you want deleted. Press the Delete Record key (F4) and the program will ask you to confirm that you actually want to delete the record. Press **Y** to delete the record; otherwise, press **N**.

Note: You may also want to edit the **Point No.** field of the other coordinates if appropriate.

Press the Exit key (Escape) to return to the Main Screen.

To delete counties, press the Select New Window key (F10) and select the **Counties Window**. An arrow appears next to all of the currently selected counties. Using the arrow keys or the first-letter method to position the highlight bar over the county to be deleted. Press **Enter**, and the arrow will disappear indicating the county has been deselected.

Press **Ctrl-Enter** when you are finished to save the revised records. You will be returned to the Main Screen.

4.4 Exiting the Program

From the Main Screen, press the Exit key (Escape) to end the program.

5.0 USERS MAINTENANCE UTILITY

If you have a menu program on your computer, choose the Users Maintenance Utility. If you do not have a menu program, refer to Section 1.6 to start the program. The program will initialize and bring up the Main Screen (see Figure 5.1). The fields are blank and are ready to add a new record.

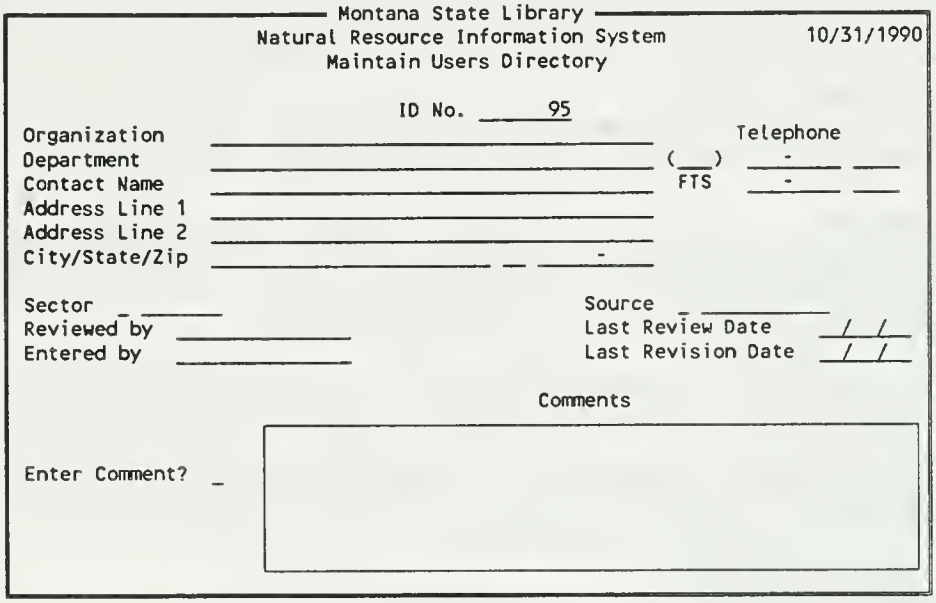


Figure 5.1. Main Screen

A complete record in this database requires entering information in the fields displayed in the Main Screen only. (Figure 5.1). There are no additional windows.

5.1 Adding a Record

Described in this section is an example of how to add a complete record, explaining each field. Our example is Jim Senkler from NRIS at the Montana State Library.

User ID: This field is maintained automatically by the program. In our example, and whenever you **add** a new record, the program automatically displays the next available number.

Organization: Enter the organization name. For this example, enter **Montana State Library.**

Department: Enter the department name. For this example, enter **Natural Resource Information System.**

Contact Name: Enter the name of the contact. For this example, enter **Senkler, Jim.** It is preferable to enter the last name first to make searching for names easier.

Address Line 1: Enter the first line of the address. For our example, enter **1515 E. Sixth Ave.**

Address Line 2: Enter the second line of the address if needed. For our example, no entry is needed.

City: Enter the name of the city. For our example, enter **Helena.**

State: Enter the state. For our example, enter **MT.**

Zip Code: Enter the Zip Code. If the state is MT, **59** is automatically entered in the field, and the cursor is position in the third column. For our example, add **620.**

Telephone: Enter the area code, telephone number and extension. If the state is MT, **406** is automatically entered into the area code. For our example, move the cursor to the telephone number field, enter **444-5354.**

FTS: Enter the Federal Telephone Service number if applicable. For our example, press **Enter** three times to skip the fields.

Sector: This field uses a look-up table. The valid sector codes are:

F - Federal
P - Private
S - State

For this example, we want to select **State.** With the look-up table on screen, highlight **State** and press enter. The code, **S**, and its description, **State**, will be directly inserted into the appropriate fields.

QUICK TIP!
In fields with look-up tables, if you know the code for your selection, simply enter that code into the field and the description will be displayed automatically.

Source: This field uses a look-up table. The valid source codes are:

G - GIS Survey
N - NRIS
U - User Update
W - WIS Survey

For this example, we want to select **User Update.** With the look-up table on screen, highlight **User Update** and press

enter. The code, **U**, and its description, **User Update**, will be inserted directly into the appropriate fields.

REMINDER!
As mentioned in section 1.2.3, the look-up tables will appear whenever the corresponding field is blank and you press enter, or when an invalid code is entered.

Reviewed by & Last Review Date: Since you are entering a new record, do not enter these fields.

Entered by: Enter your name. This field defaults to the last name entered. Your name will become the new default.

Last Revision Date: This field is maintained automatically by the program.

Edit Comment?: Enter a **Y** in this field to enter comments in the free text field to the right; otherwise, enter **N**. For our example, enter **Y**. After pressing enter, the cursor will be positioned in the Comment window.

Enter any additional comments about the user in this field. It is a free text field and you may enter as much information as you like. For our example, enter **Additional contacts: Peter Langen and Jim Stimson.** Press **Ctrl-Enter** to save the text.

Enter Comment?: These fields are free text fields and are entered by entering **Y** in the corresponding **Edit** field. They are all entered in the same area in the window, but are maintained separately.

QUICK TIP!
There are two basic instructions to remember when adding or editing data in a free text field:

1. After you add/edit a field, you must press **Ctrl-Enter** (press Ctrl and Enter simultaneously) to save the new text; and
2. To restore the field to its previous contents, press **Escape**.

Now you have completed the Main Screen. You must press the Save Record key (F3) to save the record to the database. If you press the Exit key before saving the record, the data you entered will be lost and the program will end. If you

inadvertently do this, start the program again and re-enter the data.

After you have saved the record, a blank record screen is displayed (see Figure 5.1) and you are ready to enter another user.

5.2 Editing a Record

Once you have entered a new record, you may need to make some changes. The first step is to find the record to be edited. Position the cursor in any of the fields that are indexed: **User Id**, **Organization**, or **Contact**. For our example, we will edit User ID 51.

Enter **51** in the **User ID** field. Press the Find Record key (F5). The screen shown in Figure 5.2 will appear.

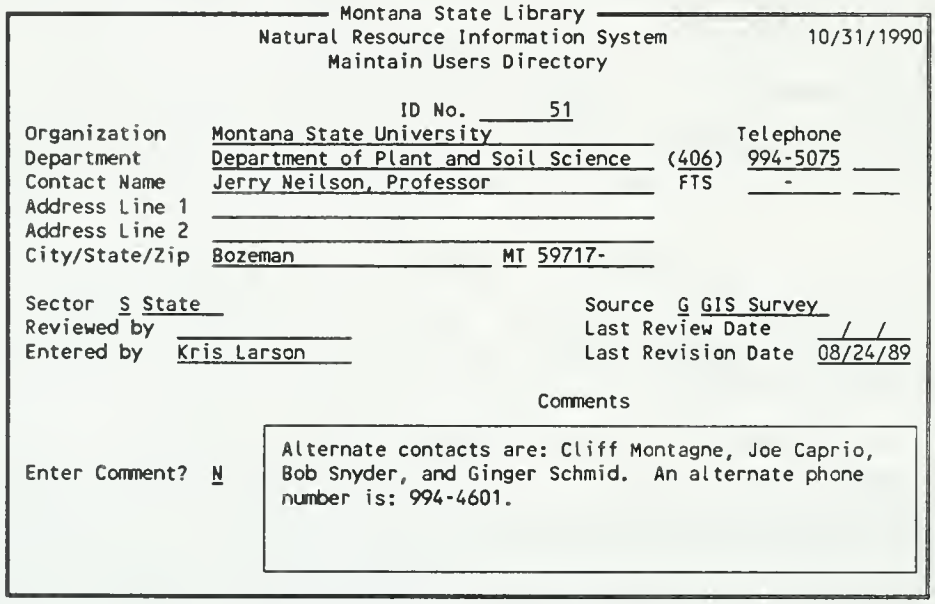

Montana State Library
Natural Resource Information System
Maintain Users Directory
10/31/1990
ID No. 51
Organization Montana State University
Telephone
Department Department of Plant and Soil Science (406) 994-5075
Contact Name Jerry Neilson, Professor FTS - -
Address Line 1
Address Line 2
City/State/Zip Bozeman MT 59717-
Sector S State
Source G GIS Survey
Reviewed by
Last Review Date / /
Entered by Kris Larson
Last Revision Date 08/24/89
Comments
Enter Comment? N
Alternate contacts are: Cliff Montagne, Joe Caprio, Bob Snyder, and Ginger Schmid. An alternate phone number is: 994-4601.

Figure 5.2. Main Screen

If you did not know the **User ID.** but did know the **Organization**, you could have entered **Montana State University** in the **Organization** field and pressed the Find Record key (F5). The record that would have been displayed would be the first record found that had Montana State University as its **Organization.** You could have then pressed the Next Record key (F6) until you the record you wanted was displayed.

Let's change the **Contact Name** for this record to reflect the preferred order of last name, first name.

Move the cursor to the **Contact Name** field using the up and down arrow keys. Enter **Neilson, Jerry, Professor.**

Since you are changing the record move the cursor to the **Reviewed by** field, and enter your name. Move the cursor to the **Last Review Date** field, and enter the date.

If you do not like the changes you have made, you can press the Restore/Clear Record key (F2), and the original record will be displayed. Press the Restore/Clear Record (F2) key again, and a blank record will be displayed ready to add a new record.

Remember, you must press the Save Record key (F3) to save the record to the database.

5.3 Deleting a Record

You can delete a user record. First, find the record as described in Section 5.2, Editing a Record, then, press the Delete Record key (F4). The program will ask you to confirm that you actually want to delete the record. Press **Y** to delete the record; otherwise, press **N**.

5.4 Exiting the Program

From the Main Screen press the Exit key (Escape) to end the program.

6.0 PROJECTS MAINTENANCE UTILITY

If you have a menu program on your computer, choose the Projects Maintenance Utility. If you do not have a menu program, refer to Section 1.6 to start the program. The program will initialize and bring up the Main Screen (see Figure 6.1). The fields are blank and are ready to add a new record.

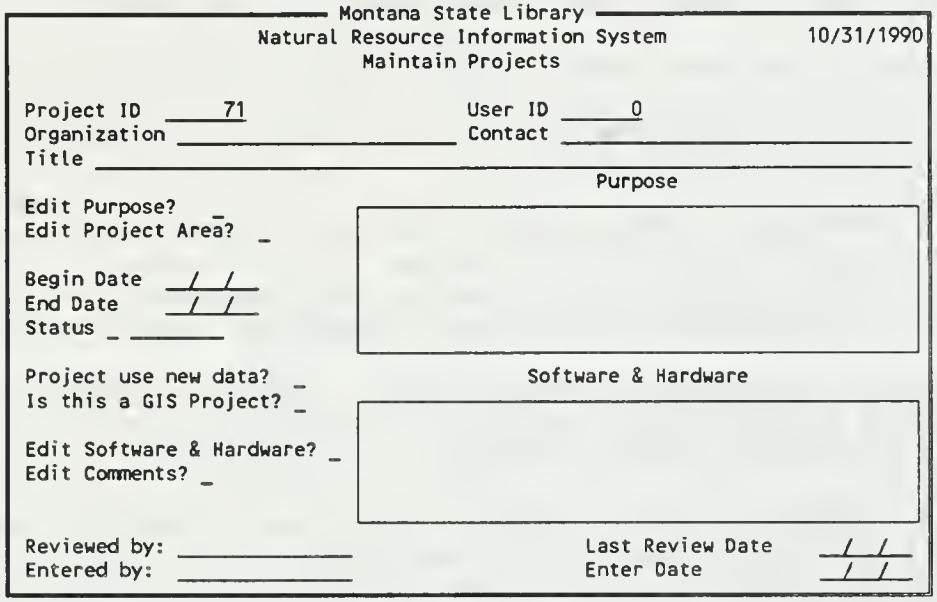


Figure 6.1. Main Screen

A complete record requires entering information in the fields displayed in the Main Screen only. (Figure 6.1). There are no additional windows.

6.1 Adding a Record

In this section, we describe an example of how to add a complete record, explaining each field. Our example is the Clark Fork Basin Water Quality Assessment project conducted by NRIS and the Water Quality bureau at DHES.

Project ID: This field is maintained automatically by the program. In our example, and whenever you **add** a new record, the program automatically displays the next available number.

User ID: Enter a valid User ID. For this example enter your User ID. User IDs are generated by the Users Maintenance program.

If your name has not been added to the User Database, you will need to exit from this program, run the Users Maintenance program, and add your name as a user.

If you do not know your User ID see Appendix E. The User ID will be the same for all projects you add.

Organization & Contact: These fields display the User's organization & contact information. Once you input your User ID, these fields are filled in automatically.

Title: Enter the title of the project. For this example, enter **Clark Fork Basin Water Quality Assessment.**

Purpose & Project Area: These fields are free text fields and are entered by entering **Y** in the corresponding **Edit** field. They are all entered in the same area in the window, but are maintained separately.

Edit Purpose?: When the cursor is positioned in this field the current purpose will appear in the window to the right. Enter a **Y** in this field to enter the purpose. After pressing enter, the cursor will be positioned in the Purpose window.

Enter the purpose of the project. For our example, enter **To develop a GIS for the management and analyses of water quality data for the Clark Fork Basin.**

Edit Project Area?: When the cursor is positioned in this field the current project area will appear in the window to the left. Enter a **Y** in this field to enter the project area. After pressing enter the cursor will be positioned in the free text field.

Enter a verbal description of the project area. For our example, enter **The entire Clark Fork Basin, from the headwaters in Butte to the Idaho border to the west and the Canadian border to the north, generally along the Continental Divide.**

Begin Date: Enter the date the project began. For this example, enter **10/01/89.**

End Date: Enter the date the project ended. For this example, enter **01/01/91.**

Status: This field uses a look-up table. The valid status codes are:

C - Completed
O - Ongoing
P - Planned

For this example, select **Ongoing.** With the look-up table on screen, highlight **Ongoing** and press enter. The code, **O**, and its description, **Ongoing**, will be directly inserted into the appropriate fields.

Project use new data?: If the project uses or generates new data, enter **Y**; otherwise, enter **N**. For this example, enter **Y**.

Is this a GIS Project?: If the project is a GIS project, enter **Y**; otherwise, enter **N**. For this example, enter **Y**.

Software & Hardware & Comments: These fields are free text fields and are entered by entering **Y** in the corresponding **Edit** field. They are all entered in the same area in the window but are maintained separately.

Edit Software & Hardware: When the cursor is positioned in this field the current software and hardware will appear in the window to the right. Enter a **Y** in this field to enter the software & hardware. After pressing enter, the cursor will be positioned in the Software & Hardware window.

Enter the software and hardware the project uses.. For our example, enter **ARC/INFO; Tektronix Workstation.**

Edit Comments?: When the cursor is positioned in this field the current comments will appear in the window to the left. Enter a **Y** in this field to enter comments. After pressing enter the cursor will be positioned in the free text field. Enter any additional comments about the project. For our example, enter **The principal investigator for the project is Gary Ingman, DHES, Water Quality Bureau. The project has been ongoing for three years, and a final report will be due in late 1991.**

Reviewed by & Last Review Date: Since you are entering a new record, do not enter these fields.

Entered by: Enter your name. This field defaults to the last name entered. Your name will become the new default.
Last Revision Date: This field is maintained automatically by the program.

Now you have completed the Main Screen. You must press the Save Record key (F3) to save the record to the database. If you press the Exit key before saving the record, the data you entered will be lost and the program will end. If you inadvertently do this, start the program again and re-enter the data.

After you have saved the record, a blank record screen is displayed (see Figure 6.1), and you are ready to enter another project.

6.2 Editing a Record

Once you have entered a new record, you may need to make some changes. The first step is to find the record to be edited. Position the cursor in any of the fields that are indexed; the **Project ID**, **User ID**, and **Title** fields are indexed. We will edit Project ID 45.

Enter **45** in the **Project ID** field. Press the Find Record key (F5). The screen shown in Figure 6.2 will appear.

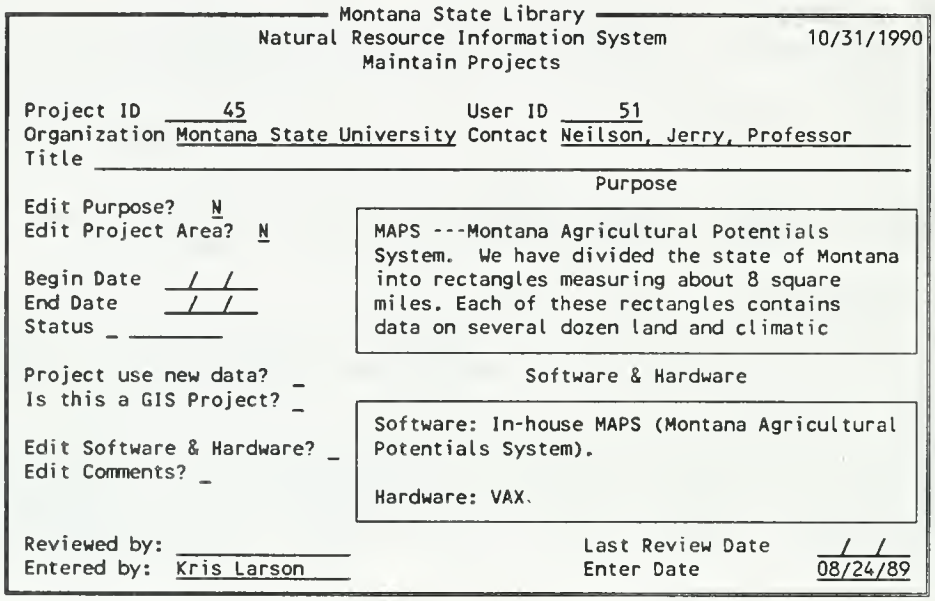

Montana State Library
Natural Resource Information System
10/31/1990
Maintain Projects
Project ID 45
User ID 51
Organization Montana State University
Contact Neilson, Jerry, Professor
Title
Purpose
Edit Purpose? N
Edit Project Area? N
MAPS ---Montana Agricultural Potentials System. We have divided the state of Montana into rectangles measuring about 8 square miles. Each of these rectangles contains data on several dozen land and climatic
Begin Date / /
End Date / /
Status _
Project use new data? _
Is this a GIS Project? _
Software & Hardware
Edit Software & Hardware? _
Edit Comments? _
Software: In-house MAPS (Montana Agricultural Potentials System).
Hardware: VAX.
Reviewed by:
Last Review Date / /
Entered by: Kris Larson
Enter Date 08/24/89

Figure 6.2. Main Screen

If you did not know the **Serial No.** but did know the **User ID**, you could have entered **51** in the **User ID** field and pressed the Find Record key (F5). The record that would have been displayed would be the first record found with **User ID** 51. You could have then pressed the Next Record key (F6) until you the record you wanted was displayed.

Let's add the **Title**, **Begin** & **End Dates**, and the **Status** for this project.

Move the cursor to the **Title** field using the up and down arrow keys. Enter **MAPS - Montana Agricultural Potentials System.**

Next move the cursor to the **Begin Date** field. Enter **09/15/88.** Enter **12/31/99** in the **End Date** field. Enter **O** in the **Status** field and **Ongoing** will be automatically displayed in the description field to the right.

Since you are changing the record, move the cursor to the **Reviewed by** field and enter your name. Move the cursor to the **Last Review Date** field and enter the date.

If you do not like the changes you have made you can press the Restore/Clear Record key (F2) and the original record will be displayed. Press the Restore/Clear Record key again and a blank record will be displayed ready to add a new record.

Now you have completed making the changes. You must press the Save Record key (F3) to save the record to the database. If you press the Exit key before saving the record, the data you entered will be lost and the program will end. If you inadvertently do this, start the program again and re-edit the record.

6.3 Deleting a Record

You can delete a project record. First, find the record as described in Section 6.2, Editing a Record, then, press the Delete Record key (F4). The program will ask you to confirm that you actually want to delete the record. Press **Y** to delete the record; otherwise, press **N**.

6.4 Exiting the Program

From the Main Screen, press the Exit key (Escape) to end the program.

7.0 INTRODUCTION

7.1 Commonly Used Keys

Exit - Escape

The Exit key is assigned to the escape key. It is used to return to the previous level of activity. If you are at the opening menu of a program, the Exit key will end the program. If you are in another menu, it will return you to the previous menu.

Help - F1

The Help key is assigned to the F1 key. It is used to display context-sensitive help. (Note: Some early releases of the software do not have help included with them.)

There is one special command: **Ctrl-Enter, it means to press the Ctrl key and the Enter key simultaneously**. This command is frequently used in the report programs to save a list of several choices made from a pick list.

7.2 Making Selections from Menus and Pick Lists

All of the report programs described in this manual make ample use of menus and pick lists to report generation. When a **menu** appears on the screen (see Figure 7.1), there are two methods for making a selection:

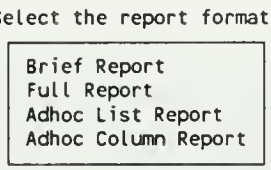


Figure 7.1. Example of a Menu

a. Use the arrow keys to position the highlight bar on the desired item and press Enter, or

b. Type the first letter of the item, which will position the highlight bar on that item, then press Enter. For items that start with the same letter, repeat the letter until the highlight bar is on your selection. For example, if the highlight bar is on **Adhoc List Report** and you press **A**, the highlight bar will move to **Adhoc Column Report.** If you press **A** again, the highlight bar will return to **Adhoc List Report.**

These same two methods can also be used to make selections from a **pick list**, like the one in Figure 7.2.

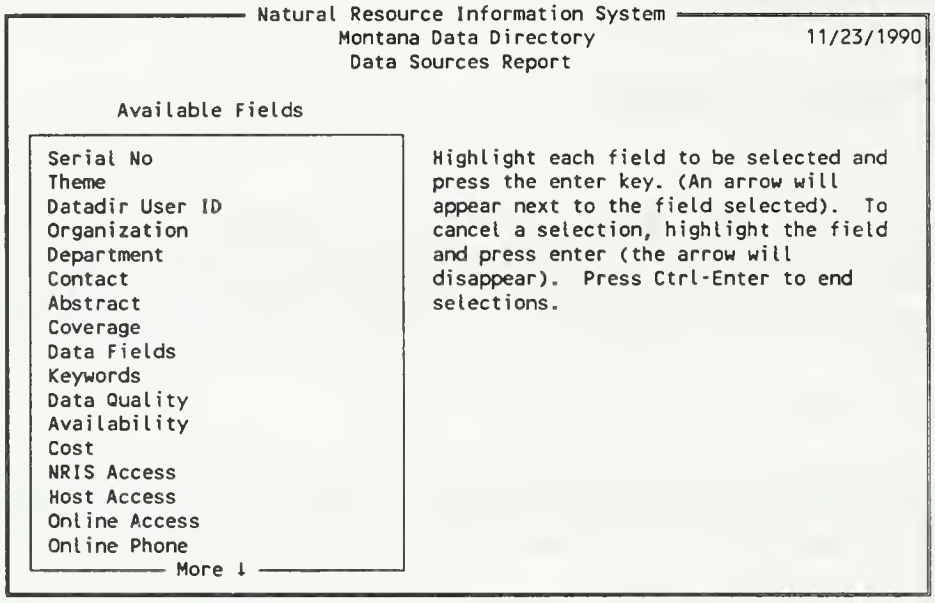


Figure 7.2 Using A Pick List

For example, you may want to select the Theme, Organization, Contact and Abstract of Data Sources for an Adhoc List Report. Using one of the two selection methods described above, you would position the highlight bar on each of the items and press Enter. When you press Enter an arrow symbol will mark the item. You can remove the arrow and cancel the selection of the item by highlighting the item again and pressing Enter a second time.

When you have completed your selections, press **Ctrl-Enter**.

7.3 Opening Screen

All three report programs will display screens with introductory information during set-up. When the report is ready you will see a message at the bottom of the screen **Press enter when ready.** Press any key and the opening screen shown in Figure 7.3 will appear shortly.

The opening screen presents you with the main menu from which you can make selections and design data retrievals. This main menu is common to all three report programs and will be referred to throughout this manual as the "opening screen." To make selections you can use one of the two methods described in Section 7.2.

Once you press the Enter key, you will be presented with a series of additional menus. You can select items from these menus in the same manner as just described.

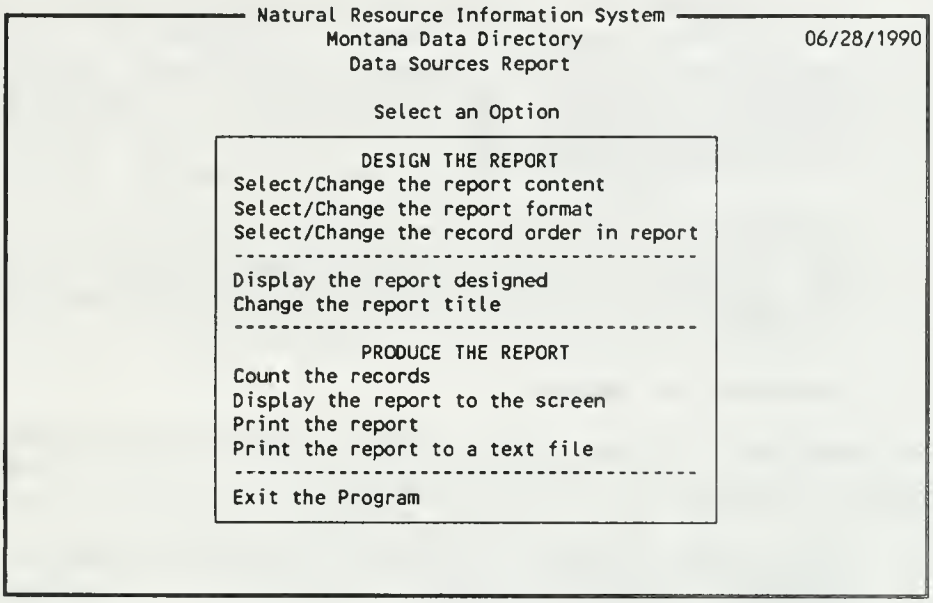


Figure 7.3. Opening Screen

7.4 Elements of a Retrieval

When you conduct a retrieval, there are two basic functions:
1) Design the report; and
2) Produce the report.

7.4.1 Design the report

There are four parts to designing retrievals for producing data reports:

1. **Select/Change the report content** (Figure 7.3). This item determines how you will look for data. That is, will you use theme, geographic coverage, keywords, or a combination of these parameters to find information on a particular data source? Will you use the agency name, the sector, the contact name or a combination of these parameters to locate a particular data user? Will you use purpose, status, GIS-applicable, or a combination of these parameters to identify a particular project?

2. **Select/Change the report format** (Figure 7.3). This item determines the amount of information you wish to include in the report. Examples of the kinds of report formats available are described in Sections 8, 9, & 10.

3. **Select/Change the record order in report** (Figure 7.3). This menu item selects, or activates, the appropriate data index to speed up the search. For example, if

you search for water databases managed by the USGS, using the agency's name, you want to activate the organization name index which allows the software to locate records by searching a smaller ordered (alphabetized) list of records rather than searching the entire database.

4. **Display the report designed** (Figure 7.3). This item allows you to review how you have designed the report. It is easy to see exactly what you've done and to correct any mistakes or omissions.

7.4.2 Produce the Report

The options listed below allow you to view your report and choose an appropriate output format:

1. **Count the records** (Figure 7.3) allows you to count the records meeting the criteria you selected when designing your report.

2. **Display the report to the screen** (Figure 7.3) allows you to view the report on your computer terminal.

3. **Print the report** (Figure 7.3) allows you to send the report to a printer.

4. **Print the report to a text file** (Figure 7.3) allows you to create a permanent text file of the report which can be used in a word processing document.

8.0 DATA SOURCES REPORT

If you have a menu program on your computer, choose the Data Sources Report. If you do not have a menu program, refer to Section 1.6 to start the program. As described in Section 7.3, the opening screen (Figure 7.3) will appear.

The following four examples are provided to illustrate how you can use the Data Sources Report. If you make a mistake when you are going through these examples, just remember to use the Exit key to back up and return to the previous menu.

8.1 Searching by Data Theme

SELECTING THE REPORT CONTENT. When the Data Sources Report is first started, the highlight bar is on the first menu item, **Select/Change the report content.** Choose this item by pressing the Enter key. The menu in Figure 8.1 will appear.

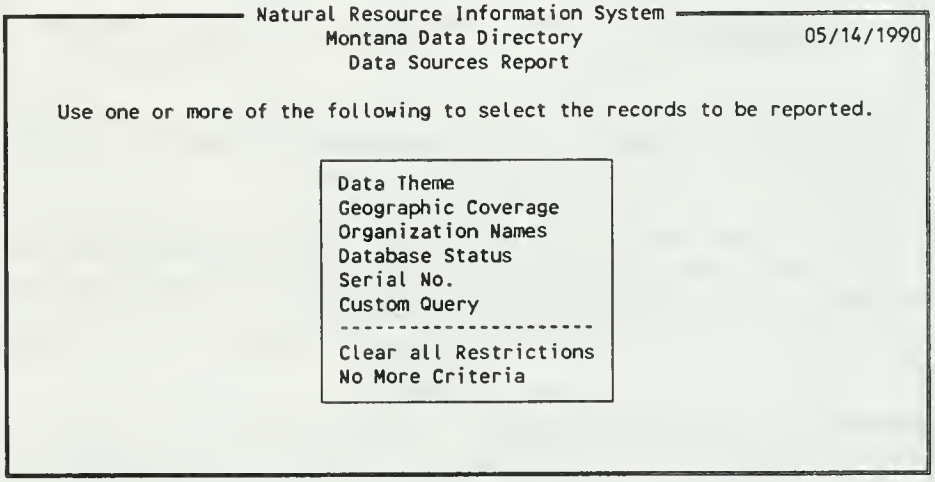


Figure 8.1. Select/Change the Report Content

When this menu appears, the highlight bar is on the **Data Theme** selection; press Enter to choose this option. The next screen will appear (Figure 8.2a).

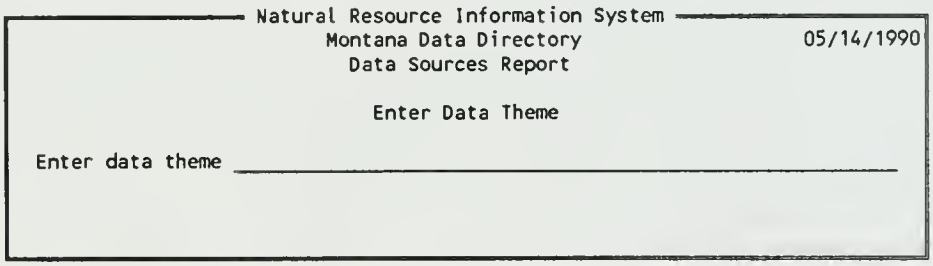


Figure 8.2a. Enter Data Theme

For example, type in **road,** and press Enter. Automatically the program searches all of the Theme, Abstract, Data Fields, and

Keywords fields for **road** using a special text index developed by Index Applications of San Antonio, Texas. Text indices differ from normal dBASE indices in that they allow the user to quickly search for text anywhere in one or more fields. In the example, entering **road** will also find records containing **railroad** or **roadway.** You can also search for more than one word; for example, entering **gravel road** will find records with both **gravel** and **road** in the Theme, Abstract, Data Fields, or Keywords fields. The program reports the number of times a record matches the theme you have selected, and stores the record numbers in the program. The next screen appears, as shown in Figure 8.2b.

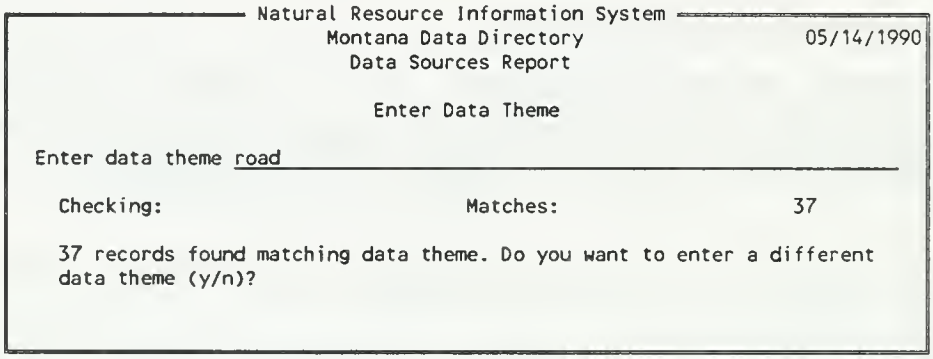


Figure 8.2b. Enter Data Theme after entering **road**

If you are satisfied with the results, press **N**, which will return you to the **Select/Change the report content** menu (Figure 8.1). If you want to enter a new data theme, press **Y**, which will return you to the screen in Figure 8.2a, and you can repeat the process. Press the Exit key to return to the opening menu (Figure 7.3).

SELECTING THE REPORT FORMAT. Now you need to specify how much information from the retrieved records you wish to include in the report. Choose **Select/Change the report format** and the next menu will appear (Figure 8.3).

QUICK TIP!
There are two basic methods to remember for selecting menu items:

1. Use the up and down arrow keys to position the highlight bar on the desired item and press **Enter**; and
2. Press the first letter of the item until the highlight bar is on the desired item and press **Enter**.

The different types of reports are described beginning with Section 8.5. For this retrieval, choose **Brief Report.** The

opening screen (Figure 7.3) will return after you've made your selection.

SELECTING THE RIGHT DATA INDEX. The next step, and it is one of the most important, is to activate the appropriate data index for the type of search you are doing. Choose **Select/Change the record order in report** from the opening screen (Figure 7.3); the menu in Figure 8.4 will come up on the screen.

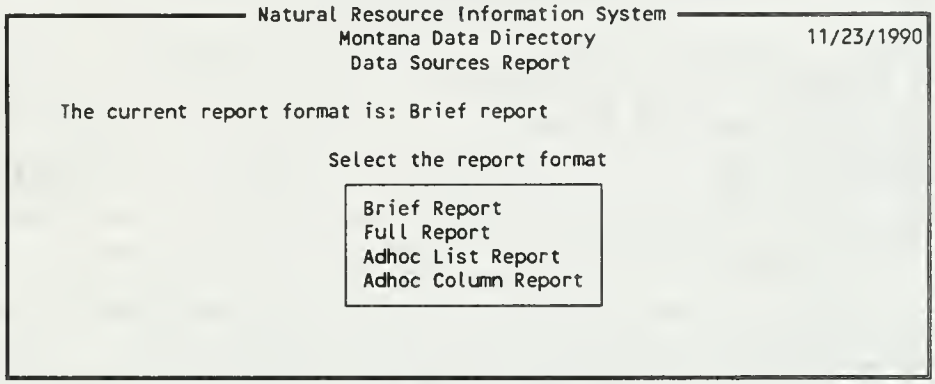


Figure 8.3. Select the Report Format

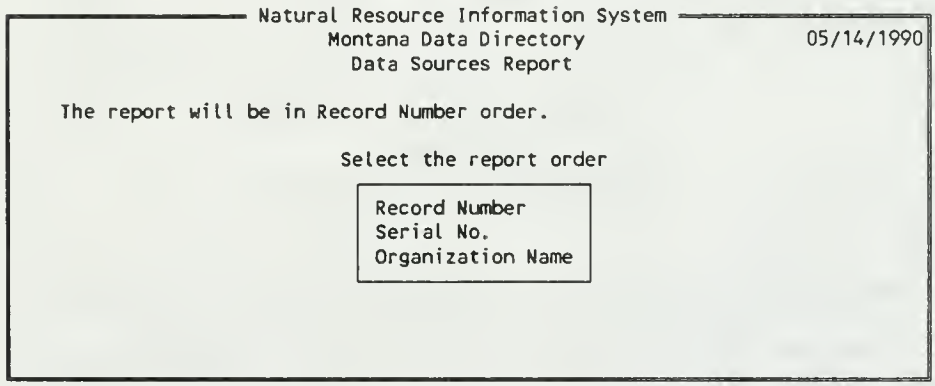


Figure 8.4. Select the Report Order

Text index searches such as searching by Data Theme or Geographic Coverage generate an internal list of record numbers. Therefore, the quickest and most efficient order to search by is record number. Select **Record Number** from this menu and you will be returned to the opening screen (Figure 7.3).

REVIEWING YOUR SELECTIONS. At this point, the required selections are completed. It is a good idea to review the selections you've made to check for errors or omissions. Use the fourth selection on the opening screen (Figure 7.3), **Display the report designed** to view your retrieval criteria (Figure 8.5).

CORRECTING MISTAKES OR CHANGING SELECTIONS. If you notice a mistake on this screen, you can go back to the appropriate

section on the opening screen (Figure 7.3) and make the required change. For example, let's change the Data Theme from **road** to **transportation.** To do so, first press Enter to get back to the opening screen (Figure 7.3). Choose **Select/Change the report content.** Now select **Data Theme** on the next screen (Figure 8.1), which will call up the screen shown in Figure 8.6.

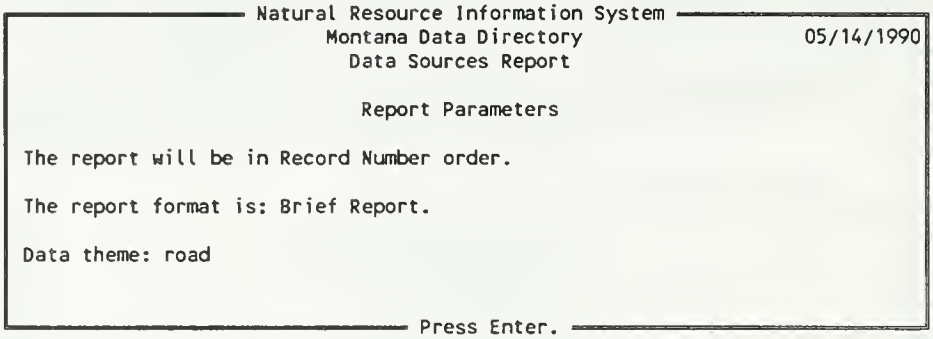


Figure 8.5. Display the Report Designed

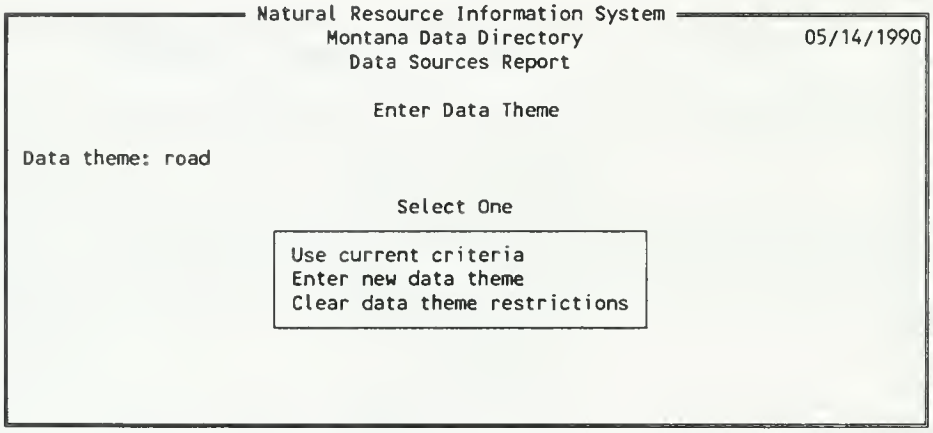


Figure 8.6. Enter Data Theme:
Choices When a Theme Has Already Been Entered

There are three options available. If you decide to use the current theme (i.e. **roads)** shown, simply press Enter. If you want to enter a different theme, select **Enter new data theme.** Remember, when you enter a new theme the old theme is deleted. If you do not want to search for any theme, for instance, you've decided to search by **Organization Name**, then choose the third menu item, **Clear data theme restrictions**, to clear or erase the theme shown.

For this example, select **Enter new data theme**, which will bring up the screen shown in Figure 8.7.

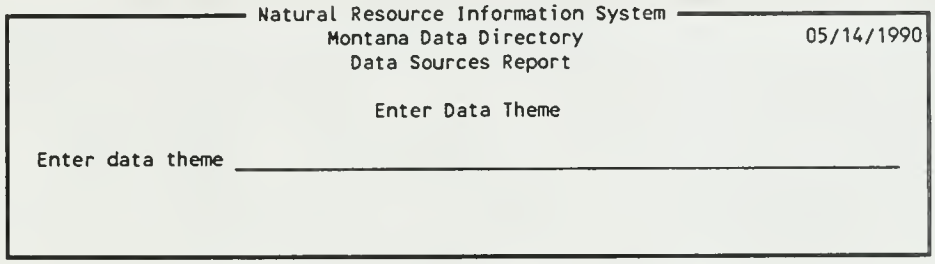


Figure 8.7. Enter Data Theme

Type in **transportation**, and press Enter. As described previously, the program will search the text index and report how many matching records it finds for **transportation.** You may enter another theme by pressing **Y,** or return to the **Select/Change the report content** menu (Figure 8.1) by pressing **N.** Press the Exit key to return to the opening menu (Figure 7.3).

PRODUCE THE REPORT. At this point, you are ready to run the retrieval and generate a report for any records with a data theme of **transportation.** There are several options to run the retrieval and produce the report:

1) Count the number of records which meet your selected criteria,
2) Display the report to the screen,
3) Send the report to the printer, or
4) Send the output to a text file.

It is a good idea to count the number of records retrieved before you attempt printing or viewing the output on the screen. If you have a very large number of records, which is common for general searches, printing may not be your wisest choice. Instead, you may want to choose one of the other report options, like sending the retrieval to a text file. You may need to make your retrieval more specific and reduce the number of records included in the report.

IMPORTANT!
Any report can be interrupted in progress by pressing any key during the retrieval.

To continue our example, select **Count the records** from the opening screen (Figure 7.3). The program will 'crank away' for a short time and then indicate how many records with the data theme **transportation** have been located (Figure 8.8).

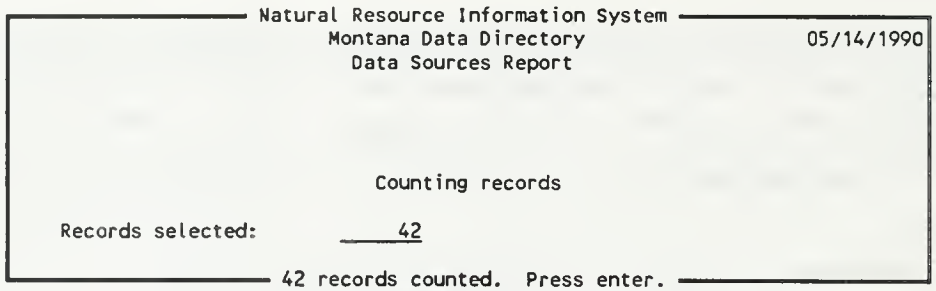


Figure 8.8. Counting Records

Now, let's change the above retrieval to make it more restrictive and reduce the number of records retrieved.

8.2 Searching by Data Theme and Organization

The search just completed found 42 data sources with the theme **transportation.** If you're looking for data produced by only one organization, for example, the MT Dept. of Highways, there is no need to retrieve all of the other records. It is possible to make the above search more specific by limiting it to MT Dept. of Highways.

SELECTING THE REPORT CONTENT. To modify the first retrieval choose the **Select/Change the report content** option. In the next menu, select **Organization Names** and the screen in Figure 8.9 will appear.

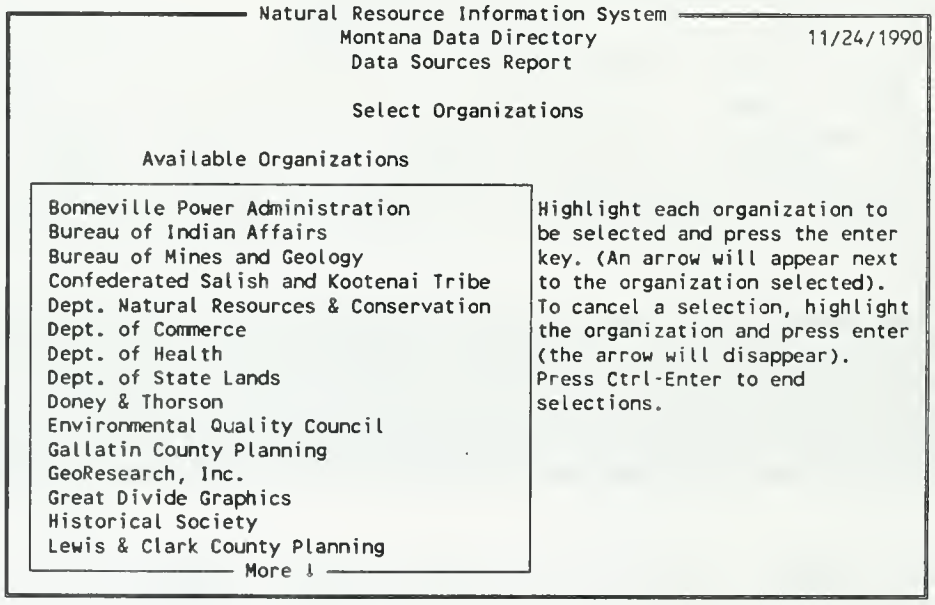

Natural Resource Information System
Montana Data Directory
Data Sources Report
11/24/1990
Select Organizations
Available Organizations
Bonneville Power Administration
Bureau of Indian Affairs
Bureau of Mines and Geology
Confederated Salish and Kootenai Tribe
Dept. Natural Resources & Conservation
Dept. of Commerce
Dept. of Health
Dept. of State Lands
Doney & Thorson
Environmental Quality Council
Gallatin County Planning
GeoResearch, Inc.
Great Divide Graphics
Historical Society
Lewis & Clark County Planning
More ↓
Highlight each organization to be selected and press the enter key. (An arrow will appear next to the organization selected). To cancel a selection, highlight the organization and press enter (the arrow will disappear). Press Ctrl-Enter to end selections.

Figure 8.9. Select Organization Names

Select **MT Dept. of Highways** and press the Exit key to return to the opening screen (Figure 7.3).

REMINDER!
To make selections from pick lists, position the highlight bar on each of the items you want selected and press Enter. When you press Enter an arrow symbol will mark the item. You can remove the arrow and cancel the selection of the item by highlighting the item again and pressing Enter a second time. When you have completed your selections, press **Ctrl-Enter.**

SELECTING THE REPORT FORMAT. Let's use the same report format as we did for the first retrieval. As a result, you will not have to make a selection for this menu item.

SELECTING THE RIGHT DATA INDEX. Sometimes when you make changes in your retrieval, you will need to decide if you should activate a different data index to make the retrieval run faster. For the present example the options are:

1. **Leave the Record Number order activated.** This means that since a text search is active the program will search only those records selected by the Data Theme search. It will move quickly to the first record with a data theme of **transportation** and 'read' through all of the records with that data theme (42 records) to find records from the MT Dept. of Highways.

2. **Activate the organization name index.** Doing this causes the program to search a list of records organized by organization name, that is, all of the records for the Bureau of Indian Affairs are grouped together, all of the records for Dept. of Commerce are grouped together, and so on. During the search, the program moves quickly down to the MT Dept. of Highways group and then it must search every record in that group for the records with for the data theme **transportation.**

To speed the retrieval, it is best to reduce the number of records the program has to search. In this example both **Record Number** order with a text search or **Organization Name** order when searching for an organization are efficient. Therefore, leave the **Record Number** order active.

The rule of thumb in choosing the appropriate index is, if you are searching primarily by **one** menu item, then select that index. For instance, if you are searching by **Serial No.**, then activate the **Serial No.** index. If you are searching by **Organization Name**, then activate that index, and so on.

On the other hand, if you are searching by more than one menu item, e.g. **Organization Name** and **Data Theme**, then it is best to determine which of the items (organization name or data theme) is most restrictive.

For example, the most restrictive parameters for a record are the record number and serial number because there is only one record number and one serial number for each record. Organization name is also fairly restrictive but probably there will be more than one record for the same organization (MT. Dept. of Highways, etc.).

REVIEWING YOUR SELECTIONS. From the opening screen (Figure 7.3), choose **Display the report designed.** Figure 8.10 is the screen you will see.

PRODUCE THE REPORT. Now select the option to count the records and you will see that only eleven records are chosen. You can look at the records with the **Display the report to the screen** option to verify that you retrieved the correct records.

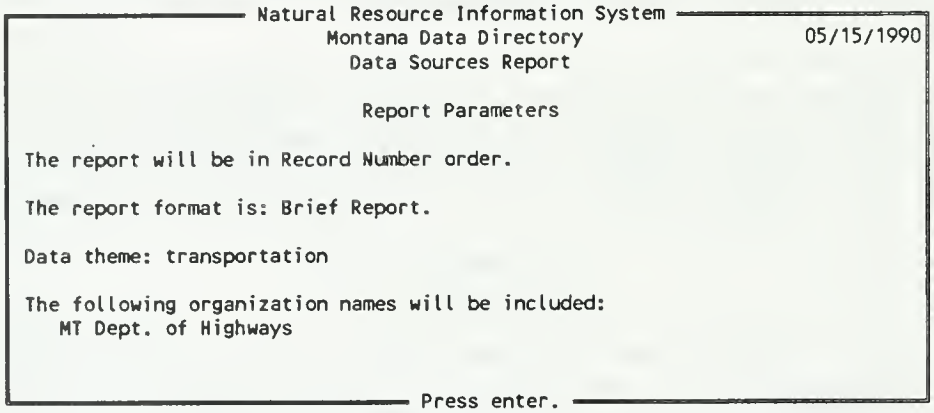


Figure 8.10. Display the Report Designed

The example in Section 8.3 will show you another type of retrieval and how to clear previous selections before running another search.

8.3 Searching by Serial No.

SELECTING THE REPORT CONTENT. After choosing **Select/Change the report content** from the opening screen (Figure 7.3), the screen in Figure 8.11 will appear.

Clearing selection criteria. In this example, we want to search by **Serial No.** If you select the **Serial No.** option and enter a serial no. without first clearing all previous selections, you will wind up searching by both the data theme and organization name selections of the previous search, and the serial no. you enter now. Your search will be unsuccessful,

unless you happen to choose a serial no. for a record found with data theme **transportation** and from the MT Dept. of Highways.

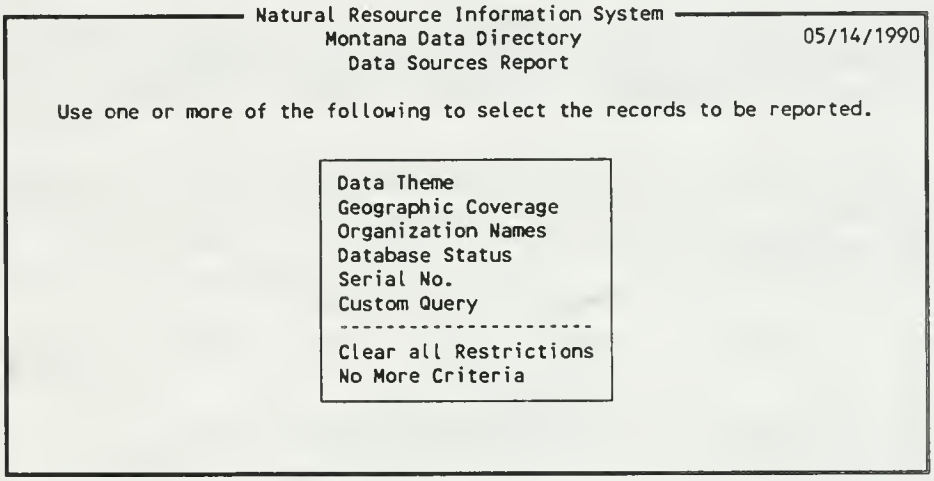


Figure 8.11. Select/Change the Report Content

IMPORTANT!
As a rule it is a good idea to clear old search criteria before you begin a new search. If you are unsuccessful in a search where you expect results, select **Display the report designed** from the opening screen to make sure you have not forgotten to clear previous search criteria.

Clear the Data Theme and Organization Name restrictions by choosing **Clear all restrictions** and the program will tell you **All record restrictions have been cleared. Press enter.** Once you press Enter the previous screen (Figure 8.11) will return.

Entering new selection criteria. Selecting **Serial No.** will bring up the screen in Figure 8.12.

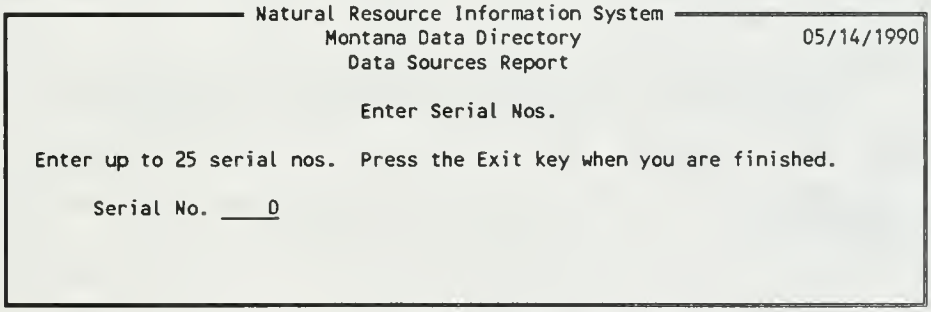

Natural Resource Information System
Montana Data Directory
Data Sources Report
05/14/1990
Enter Serial Nos.
Enter up to 25 serial nos. Press the Exit key when you are finished.
Serial No. 0

Figure 8.12. Enter Serial Nos.

As an example, type in **34** and **212**, pressing Enter after each entry. Use the Exit key twice to return to the opening screen (Figure 7.3).

SELECTING THE REPORT FORMAT. Now choose **Select/Change the report format** from the opening screen (Figure 7.3). Choose **Full Report** from the report selection screen (Figure 8.13).

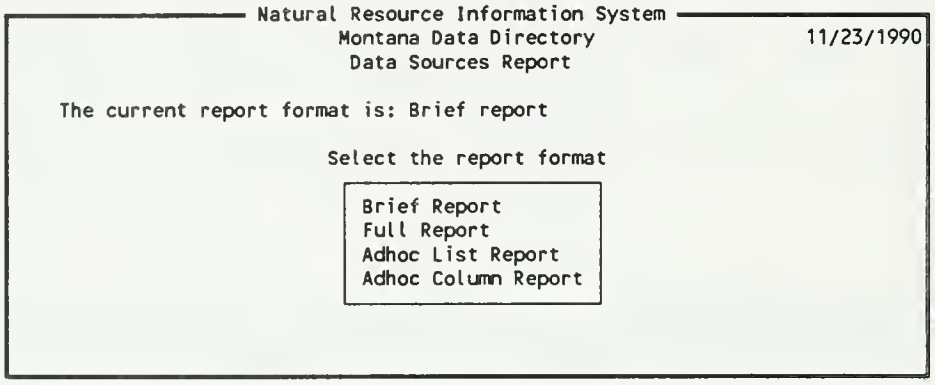


Figure 8.13. Select the Report Format

CHANGING THE REPORT ORDER. Choose **Select/Change the record order in report** from the opening menu (Figure 7.3). On the next screen to appear select **Serial No.** which will activate the serial no. index. You have now made all of the required selections and can run the retrieval.

REVIEWING YOUR SELECTIONS. Review the settings to see if your retrieval is ready to be executed (Figure 8.14).

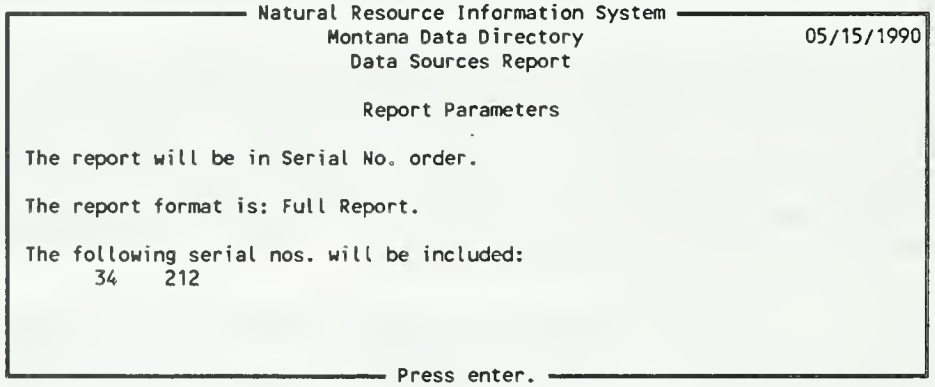


Figure 8.14. Display the Report Designed

PRODUCE THE REPORT. Press enter to return to the opening screen (Figure 7.3). You can now select any of the **PRODUCE THE REPORT** options.

8.4 How to Design a Custom Query

The previous examples show you the kinds of searches that can be constructed using the pre-set menus. As we receive feedback from users we will add other selections to these menus. We hope the current retrievals generated through the menus are sufficient. However, for some users, such retrievals may not be specific enough, or may provide too much or too little information.

To overcome these limitations, we have included the capability to construct very focused searches and report formats. In this manual, we refer to these restrictive, focused searches as Custom Queries and Adhoc Reports.

The Custom Queries can, for example, be used to locate data sources which:

1. Have transportation among the data themes, are publicly available in hardcopy format, and are accessible through modem.
2. Have excellent attribute documentation.
3. Are currently under development.
4. Are rated as having 'excellent' data quality.

To create a Custom Query you will need a fairly good working knowledge of the Data Directory database structures and be able to write search expressions in dBASE III+ style. Specifically, you must determine which of the several Data Directory databases (see Appendix B) you need to use and the name of the field, or fields, you wish to search.

For instance, if you were conducting a search for data sources that are publicly available in hardcopy format, you would need to use both the Data Sources database, searching the **AVAILABLE** field for the public code and the Data Format database, searching for **HARDCOPY** field for a true value.

The **Custom Query** screens will help you construct the query by leading you through the important steps. **However, a word of warning is necessary here. Custom Queries are definitely advanced database operations that will not work unless they are constructed correctly.** We suggest you familiarize yourself thoroughly with the Montana Data Directory databases, what fields they contain, how the data were collected, how the data should be interpreted, etc., before you try to construct complex Custom Queries.

A good way to become familiar with the Data Directory databases is to look through Appendix B of this manual. Any database and field listed in Appendix B can be used to construct Custom Queries.

As far as learning how to write search expressions, you can activate the online help while you're in the Custom Query

screens and examine the examples provided. With a little practice and patience, you will be able to create very focused and effective queries. In the following example, data that are publicly available in hardcopy format with a transportation theme will be used to help you learn how to use the **Custom Query** option. The example also describes how to use the **Adhoc Report** formats which allow you to select the specific information about the data sources that you have retrieved for your report.

SELECTING THE REPORT CONTENT. Choose the **Select/Change the report content** from the opening screen (Figure 7.3). From the next screen that appears as shown in Figure 8.15, choose **Custom Query** and the screen shown in Figure 8.16 will appear.

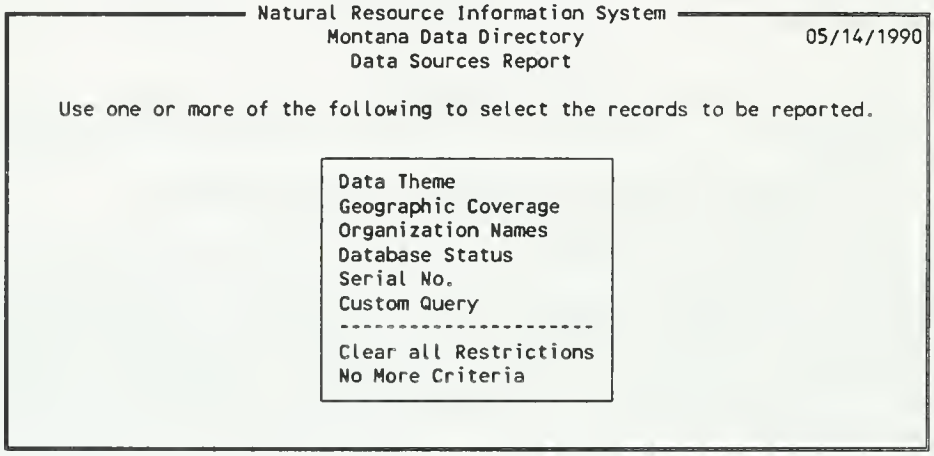


Figure 8.15. Select/Change the Report Content

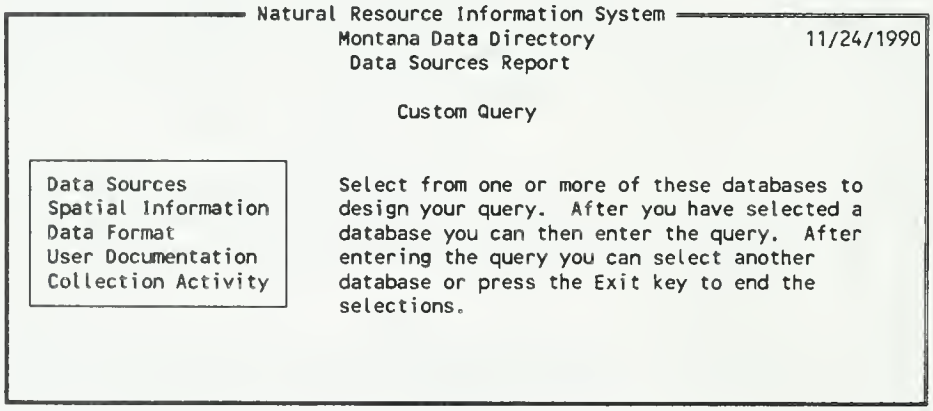

Natural Resource Information System
Montana Data Directory
11/24/1990
Data Sources Report
Custom Query
Data Sources
Spatial Information
Data Format
User Documentation
Collection Activity
Select from one or more of these databases to design your query. After you have selected a database you can then enter the query. After entering the query you can select another database or press the Exit key to end the selections.

Figure 8.16. Custom Query - Select the Database

This screen allows you to select the database(s) to use for your Custom Query. In this example, you will have to search both the **AVAILABLE** field in the Data Sources database and **HARDCOPY** field in the Data Format database. You can select only one database at a time, so select **Data Sources** and the screen shown in Figure 8.17 will appear. This screen presents you with an area where you will type in your Custom Query expression.

Several things are critical here. First, you must know the precise name of the field(s) you intend to use and the type of field you are working with, that is, whether it is a character, numeric, date, or logical field. This information is available in Appendix B. Second, you must type the expression in a way that conforms to dBASE III+ syntax. This screen (Figure 8.17) and other similar screens provide you with some explanation.

For this example, we want to locate records that are publicly available. The Data Sources database structure in Appendix B provides you with the codes used in the **AVAILABLE** field and their meaning; in this case we find that the publicly available data is indicated by the characters 'PU'. Therefore, the search expression will look like this as it appears on the screen (Figure 8.18):

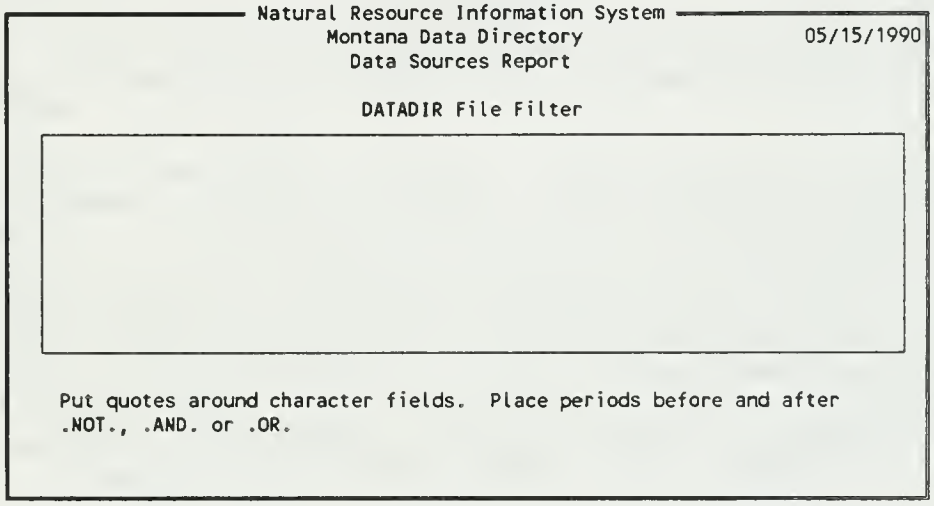

Natural Resource Information System
Montana Data Directory
Data Sources Report
05/15/1990
DATADIR File Filter
Put quotes around character fields. Place periods before and after
.NOT., .AND. or .OR.

Figure 8.17. Enter DATADIR File Filter

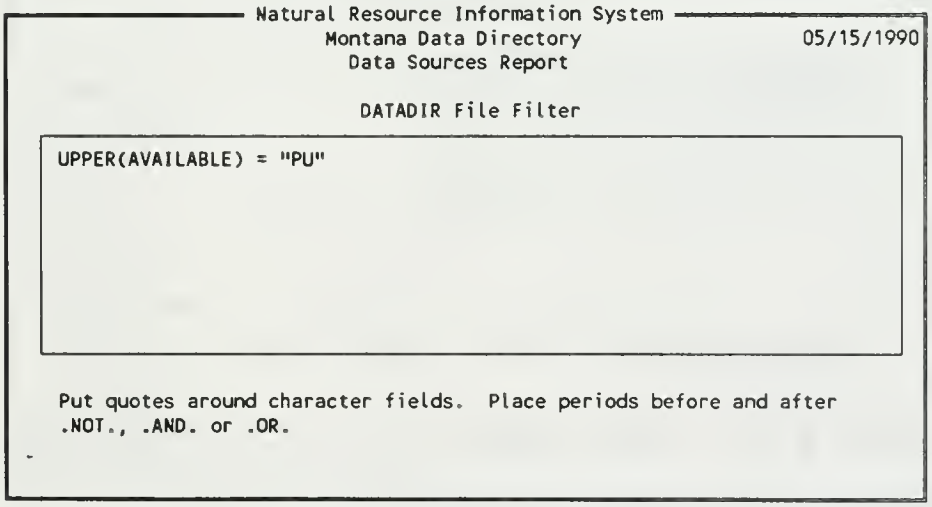


Figure 8.18. Enter DATADIR File Filter after entry

Note that quotation marks are only used for character fields. Numeric, logical and date fields use different syntax. Once you finish typing the expression, press return, and the program will check to see whether your expression is a valid dBASE III+ expression. An error message will appear if you have made a mistake and you will have to re-enter the expression correctly before the program will allow you to continue. If you are unable to enter a valid expression, erase the entire expression and press the Enter key.

If the syntax is correct, the first Custom Query screen (Figure 8.17) will return. In order to select data that is available in hardcopy format select **Data Format** and the screen in Figure 8.19 will appear.

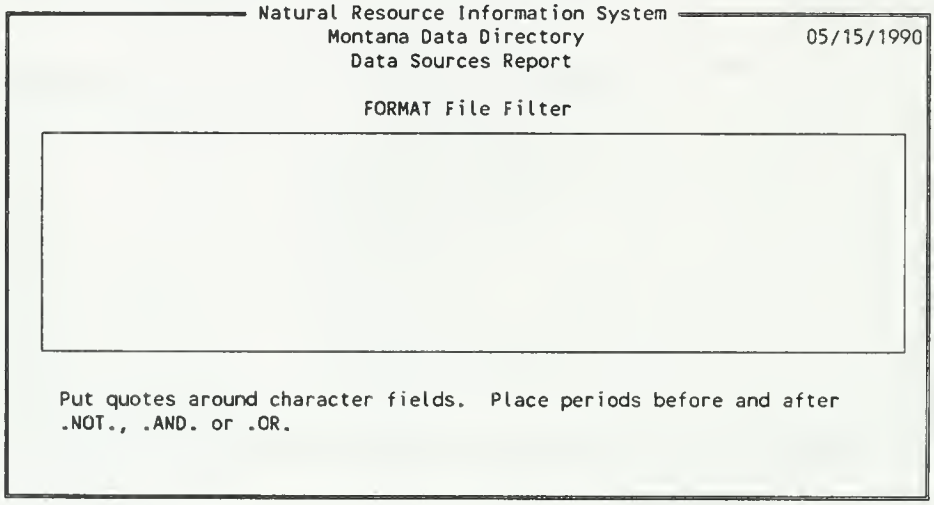

Natural Resource Information System
Montana Data Directory
05/15/1990
Data Sources Report
FORMAT File Filter
Put quotes around character fields. Place periods before and after
.NOT., .AND. or .OR.

Figure 8.19. Enter FORMAT File Filter

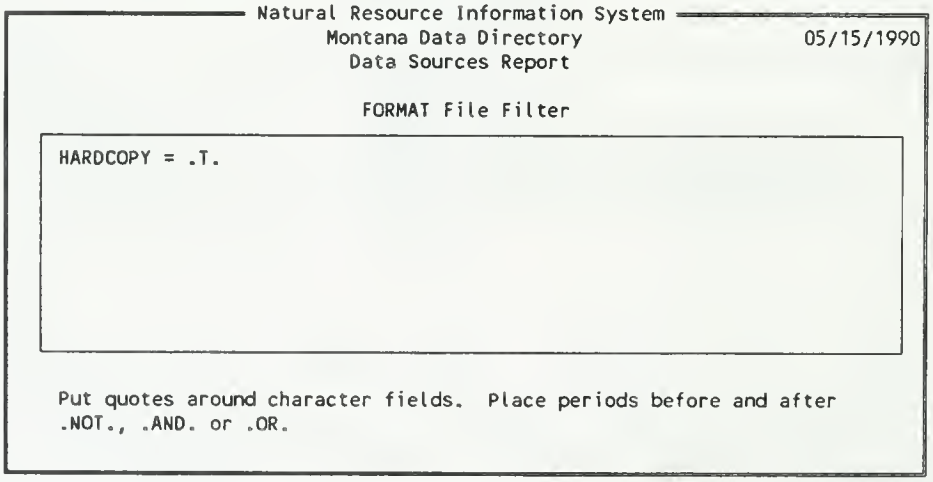


Figure 8.20. Enter FORMAT File Filter after entry

Once again, this screen presents you with an open area where you will type in your search expression. For this example, we

want to locate records that are available in hardcopy format. The Data Format Database Structure in Appendix B shows you that the **HARDCOPY** field is a logical field. Therefore, the search expression will be as it appears in Figure 8.20.

Once you finish typing the expression, press return, and again the program will check to see whether your expression is a valid dBASE III+ expression.

If the syntax is correct, the first Custom Query screen (Figure 8.17) will return. You could select another database at this point and enter another expression which would be checked in conjunction with the previous expressions. For our example, simply hit the Exit key twice to return you to the opening screen (Figure 7.3).

Before running the retrieval, restrict the search to transportation in the **Data Theme** and select **Record Number** as the order. See Section 8.1 if you don't remember how to select a data theme and set the order.

SELECTING THE REPORT FORMAT. Now choose **Select/Change the report format** from the opening screen (Figure 7.3). You have the option of selecting from one of the pre-defined report formats, or you may choose to create your own report using the **Adhoc List Report** or the **Adhoc Column Report** format. The **Adhoc List Report** format is useful in making sure the records you want are actually being selected by allowing you to view those fields which actually contain the selection criteria you have entered. Select **Adhoc List Report** and the screen in Figure 8.21 will appear.

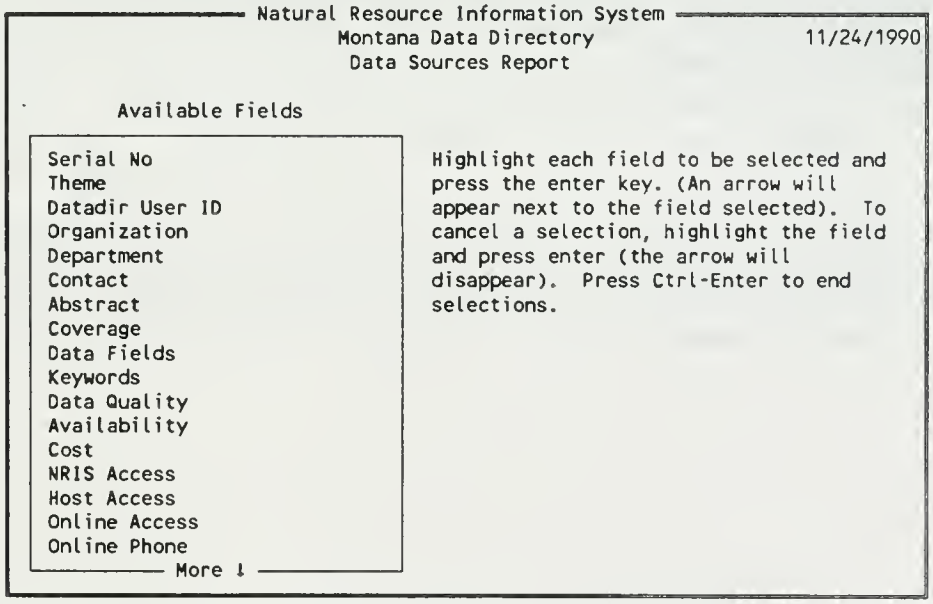


Figure 8.21. Available Fields for Adhoc List Report

When you restrict the selection by data theme the program examines the Theme, Abstract, Data Fields, and Keywords fields for the theme you have entered, (in this example **transportation**). Our Custom Query examines the **AVAILABLE** field and the **HARDCOPY** field in the Data Formats database. So for this example, select the following fields: **Serial No**, **Theme**, **Organization**, **Abstract**, **Data Fields**, **Keywords**, **Availability**, and **Data Formats**. The screen in Figure 8.22 will appear indicating that you have selected those fields.

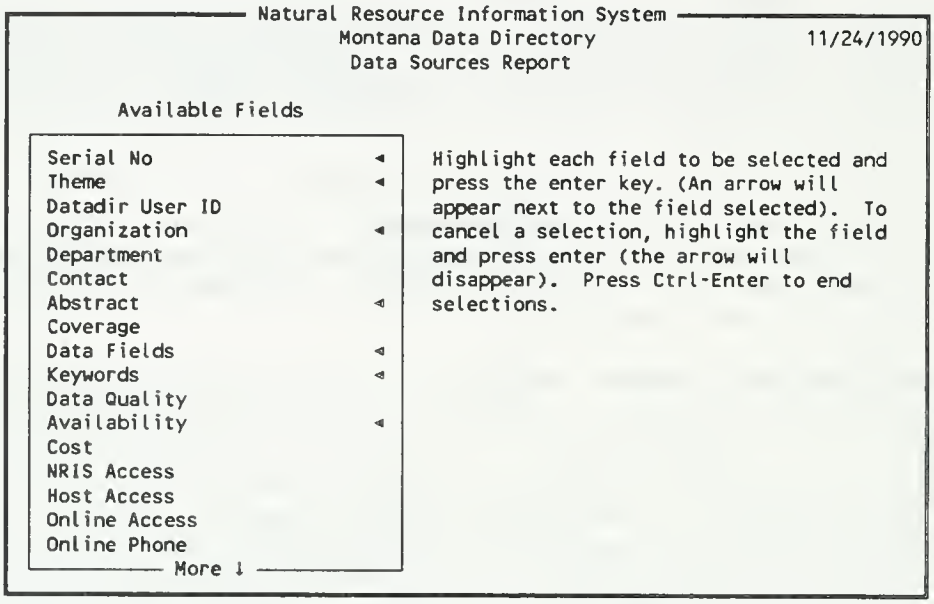


Figure 8.22. Selected Available Fields for Adhoc List Report

REVIEWING YOUR SELECTIONS. From the opening screen (Figure 7.3), choose **Display the report designed** to see the screen in Figure 8.23 and to make sure your retrieval will provide the information you need.

```
Natural Resource Information System
                    Montana Data Directory                    11/23/1990
                     Data Sources Report

                      Report Parameters

The report will be in Record Number order.

The report format is: Adhoc List Report.
Fields to be reported:
   Serial No            Theme                Organization
   Abstract             Data Fields          Keywords
   Availability         Data Formats

Data theme: transportation

DATADIR file filter is set to:
 UPPER(AVAILABLE) = "PU"


FORMAT file filter is set to:
 HARDCOPY = .T.
```

Figure 8.23. Display the Report Designed

PRODUCE THE REPORT. Now press Enter to return to the opening screen (Figure 7.3). You can now select any of the **PRODUCE THE REPORT** options. After you examine the report, you may want to try some other Custom Queries. After you have more experience with the Custom Query, you can try more complex retrievals.

8.5 Generating Reports

In the previous examples you have selected different types of reports and displayed them to the screen. In this section, re-enter the retrieval you designed in Section 8.1 **Searching by Data Theme** and print it out in each of the four available formats to help you determine which of the formats you prefer. Obviously, your preference may change depending on the kind of search you do, the kind of questions you need answered, and the level of detail you desire.

In addition to selecting the report format, the Data Sources Report software also gives you several options to where you send the report. These options can be seen under **PRODUCE THE REPORT** on the opening screen (Figure 7.3) and repeated here as Figure 8.24.

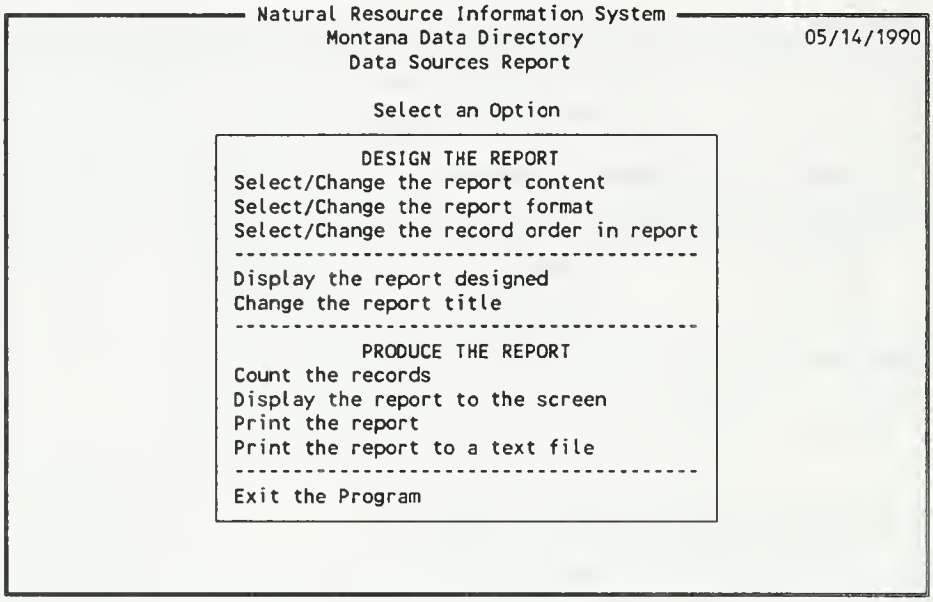


Figure 8.24. Opening Screen

The first option allows you to count the records included in your retrieval. Counting records is a very good thing to do **prior** to printing a report so that you have some idea of how large the report will be and how long it will take to print. If the report is very large, you may want to redesign your retrieval to reduce the number of records included, or you may want to send the report to a text file.

The other options available are to display the report to the screen (which you have already done), print the report on your printer, and print the report to a text file (which simply sends the report to a text file on your hard disk or to a floppy disk).

8.6 Brief Report

From the opening screen, choose **Select/Change the report format** which will bring up the report selection screen as shown in Figure 8.25.

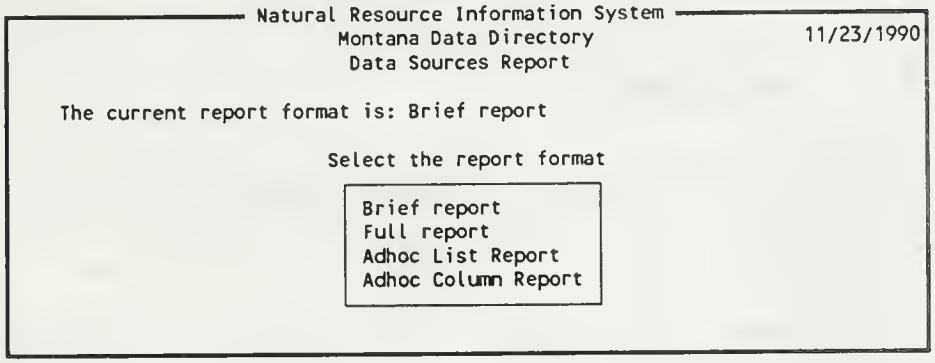


Figure 8.25. Select the Report Format

Choose the **Brief Report** and when you return to the opening screen (Figure 8.24), select **Print the report.** This report provides a brief review of data sources. However, if you need more detailed information you will have to use one of the other report formats. The report is shown in Figure 8.28.

8.7 Full Report

From the opening screen re-select **Select/Change the report format** and on the report selection screen choose **Full Report.** Now return to the opening screen and print the report by choosing **Print the report.** This report shows you every piece of information on record for the selected data. It is the maximum level of detail you can obtain in a Data Sources Report. The report is shown in Figure 8.29.

8.8 Adhoc List Report

From the opening screen, again select **Select/Change the report format** and on the report selection screen choose **Adhoc List Report** and the screen in Figure 8.26 will appear.

Select **Theme**, **Organization**, **Department**, **Contact**, **Abstract**, **Coverage**, **Data Quality**, and **Availability** from the menu. Now return to the opening screen and print the report by choosing **Print the report.** This report shows you those fields you chose for the selected data. The report is shown in Figure 8.30.

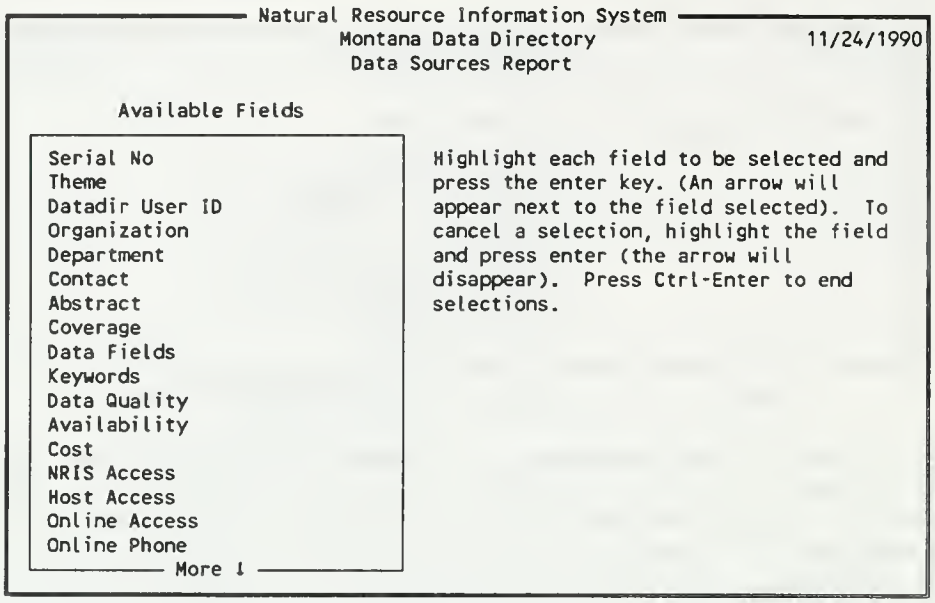


Figure 8.26. Available Fields for Adhoc List Report

8.9 Adhoc Column Report

From the opening screen, again select **Select/Change the report format** and on the report selection screen choose **Adhoc Column Report** and the screen in Figure 8.27 will appear.

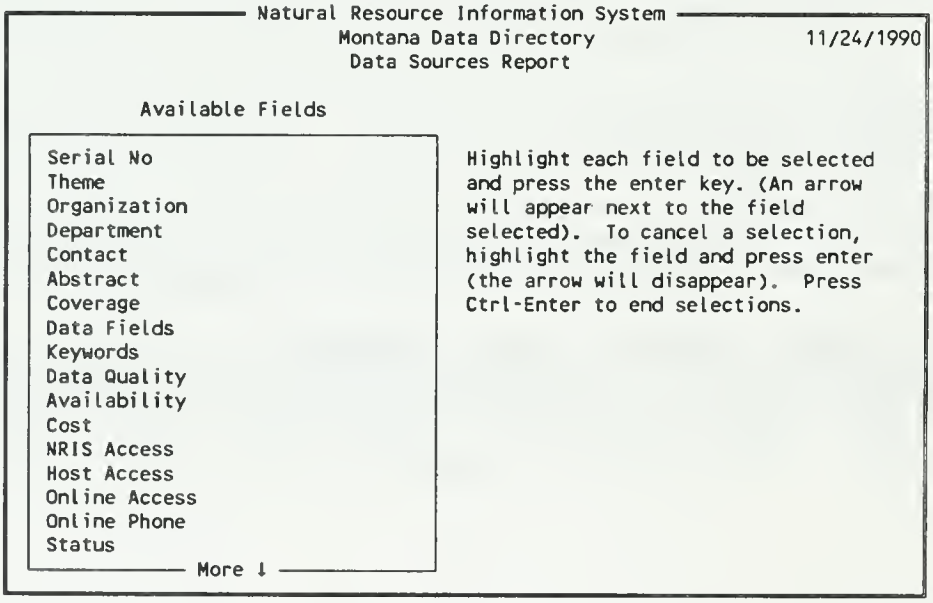


Figure 8.27. Available Fields for Adhoc Column Report

This report generates one record per row and shows as many columns as will fit in one row no matter how many fields you select. Select **Theme**, **Organization**, **Coverage**, and **Availability** from the menu. Now return to the opening screen and print the report by choosing **Print the report**. The report is shown in

Figure 8.31. As you can see only parts of the **Theme** and **Organization** fields are reported. Which fields, and the width of each field is governed by the RPDIR.RPT file. See appendix G for more information.

```
                    Natural Resource Information System          06/20/1990
                          Montana Data Directory
                            Data Sources Report

                                Serial No.: 17
Theme: Utility-Transportation corridor
Organization: Dept. Natural Resources & Conservation
Department: Facility Siting Bureau                          User ID:     9
Contact: Ring, Tom, Natural & Earth Sci Coord.   Phone: (406) 444-6785
         1520 E. Sixth Avenue
         Helena, MT  59620

Abstract: study for Montana- the existing situation and options for future
          corridor selection
Coverage: Montana
Data Quality: Unknown        Status: Unknown
Availability: Public         Cost: Unknown

                                Serial No.: 21
Theme: State Maps
Organization: MT Dept. of Highways                          User ID:    17
Contact: Cromer, Don, Rural Planning Section     Phone: (406) 444-6103
         2701 Prospect Avenue
         Helena, MT  59620

Coverage: Montana - entire state
Data Quality: Unknown        Status: Unknown
Availability: Public         Cost: costs vary with size ordered

                                Serial No.: 22
Theme: Functional Class
Organization: MT Dept. of Highways                          User ID:    17
Contact: Cromer, Don, Rural Planning Section     Phone: (406) 444-6103
         2701 Prospect Avenue
         Helena, MT  59620

Coverage: Montana - entire state
Data Quality: Unknown        Status: Unknown
Availability: Public         Cost: costs vary with the size

                                Serial No.: 23
Theme: Traffic Flow
Organization: MT Dept. of Highways                          User ID:    17
Contact: Cromer, Don, Rural Planning Section     Phone: (406) 444-6103
         2701 Prospect Avenue
         Helena, MT  59620

Coverage: Montana - entire state
Data Quality: Unknown        Status: Unknown
Availability: Public         Cost: costs vary with the size
```

Figure 8.28. Example of Brief Report

Natural Resource Information System 06/20/1990
Montana Data Directory
Data Sources Report

1. DATA THEME:

Theme Description:
Utility-Transportation corridor study for Montana- the existing situation and options for future corridor selection

Data Fields:
electric transmission lines; major substations; hydro-electric generation; thermo-electric power plants; ownership; pipelines; oil; natural gas; refined products; oil & gas fields; oil field; gas field; oil refineries; gasification plants; compressor and pump stations; coal mines; intra-city telephone trunks; microwave relay stations; radio sites; railroads; major paved roads

Keywords:
coal; corridors; gasification plants; hydro-electric generation; microwave; oil; ownership; pipelines; railroads; roads; transmission lines; utilities

Region Covered:
Montana

2. DATA FORMAT:

Media/Software & Hardware		H	D
Map	Mylar overlays to AMS 1:250,000 maps		X

H = Hardcopy D = Digital

3. DATA QUALITY:
Data Quality: Unknown

4. DATA COLLECTION/ACCESS:
Date Collected: 01/01/1981 - 12/31/1981
Collected by (Agency): DNRC, USDA-USFS, USDI-BLM
Availability : Public
Through NRIS : Unknown Through Agency: Full Access
On-line access: Unknown
Status: Unknown Update Frequency: Unknown
Cost:

5. USER DOCUMENTATION: None.

6. SPATIAL COMPONENT:
Scale: 1:250000 Resolution:
Projection: Unknown
Coordinates: Unknown
Feature Type: Point and Arc
Documentation: Attribute: Intermediate Coordinate: Unknown
Accuracy: Attribute: Good Coordinate: Unknown

7. COMMENTS: None.

8. CONTACT:
Organization: Dept. Natural Resources & Conservation
Department: Facility Siting Bureau
Contact: Ring, Tom, Natural & Earth Sci Coord. Phone: (406) 444-6785
1520 E. Sixth Avenue
Helena, MT 59620

Serial No: 17 User ID: 9

9. PROJECT: None.

Figure 8.29. Example of a Full Report

```
                    Natural Resource Information System          11/24/1990
                          Montana Data Directory
                           Data Sources Report


Theme:          Utility-Transportation corridor
Organization:   Dept. Natural Resources & Conservation
Department:     Facility Siting Bureau
Contact: Ring, Tom, Natural & Earth Sci Coord.
         1520 E. Sixth Avenue
         Helena, MT  59620
Phone:   (406) 444-6785
Abstract: study for Montana- the existing situation and options for future
          corridor selection
Coverage: Montana
Data Quality:   Unknown
Availability:   Public

Theme:          State Maps
Organization:   MT Dept. of Highways
Department:
Contact: Cromer, Don, Rural Planning Section
         2701 Prospect Avenue
         Helena, MT  59620
Phone:   (406) 444-6103
Abstract:
Coverage: Montana - entire state
Data Quality:   Unknown
Availability:   Public

Theme:          Functional Class
Organization:   MT Dept. of Highways
Department:
Contact: Cromer, Don, Rural Planning Section
         2701 Prospect Avenue
         Helena, MT  59620
Phone:   (406) 444-6103
Abstract:
Coverage: Montana - entire state
Data Quality:   Unknown
Availability:   Public

Theme:          Traffic Flow
Organization:   MT Dept. of Highways
Department:
Contact: Cromer, Don, Rural Planning Section
         2701 Prospect Avenue
         Helena, MT  59620
Phone:   (406) 444-6103
Abstract:
Coverage: Montana - entire state
Data Quality:   Unknown
Availability:   Public
```

Figure 8.30. Example of an Adhoc List Report

Natural Resource Information System 11/24/1990
Montana Data Directory
Data Sources Report

Theme	Organization
Utility-Transportation corrido	Dept. Natural Resources & Cons
State Maps	MT Dept. of Highways
Functional Class	MT Dept. of Highways
Traffic Flow	MT Dept. of Highways
Equivalent Single Axle Load Ma	MT Dept. of Highways
Forest Highway Map	MT Dept. of Highways
U.S. 93 Corridor	MT Dept. of Highways
MT. 200 Corridor	MT Dept. of Highways
U.S. 2 Corridor	MT Dept. of Highways
GT. Falls Billings Corridor	MT Dept. of Highways
Sufficiency	MT Dept. of Highways
Road Info	MT Dept. of Highways
Transportation	Missoula County Surveyor's Off
Roads	U.S. Fish and Wildlife Service
Roads	National Park Service
Trails	National Park Service
Railroads	MT Dept. of State Lands
Roads and trails	MT Dept. of State Lands
Utilities	MT Dept. of State Lands
Blackfoot River Watershed	U.S. Environmental Protection
Roads	U.S. Forest Service
Butte Transportation	Natural Resource Information S
Butte Railroads	Natural Resource Information S
USGS Digital Line Graph Data,	Natural Resource Information S
USGS Digital Line Graph Data,	Natural Resource Information S
USGS Digital Line Graph Data,	Natural Resource Information S
Transportation/Utility	Natural Resource Information S
Roads	Bureau of Indian Affairs
Forest Road Compartments	Bureau of Indian Affairs
Forest Road Units	Bureau of Indian Affairs
Roads	Bureau of Indian Affairs
Roads	Bureau of Indian Affairs
Roads	Bureau of Indian Affairs
Roads	Bureau of Indian Affairs
Transportation	Bureau of Indian Affairs
Roads	Bureau of Indian Affairs
Roads	Bureau of Indian Affairs
Musselshell Drainage Basin: Su	Dept. Natural Resources & Cons
Transportation	U.S. Bureau of Land Management

Figure 8.31. - Example of an Adhoc Column Report

9.0 USERS REPORT

If you have a menu program on your computer, choose the Users Report. If you do not have a menu program, refer to Section 1.6 to start the program. As described in Section 7.3, the opening screen (Figure 7.3) will appear.

The following three examples are provided to show you how to use the Users Report. If you make a mistake when you are going through these examples, just remember to use the Exit key to back up and return to the previous menu.

Please note that the Users Report functions very similarly to the Data Sources Report described in Section 8.0. In the examples below we will refer to Section 8.0 where appropriate for a more in-depth discussion of a topic. On the other hand, some parts of Section 8.0 are repeated for clarity and convenience.

9.1 Searching by Organization Name

SELECTING THE REPORT CONTENT. When the Users Report is first started the highlight bar is on **Select/Change the report content**. Choose this item (Figure 9.1):

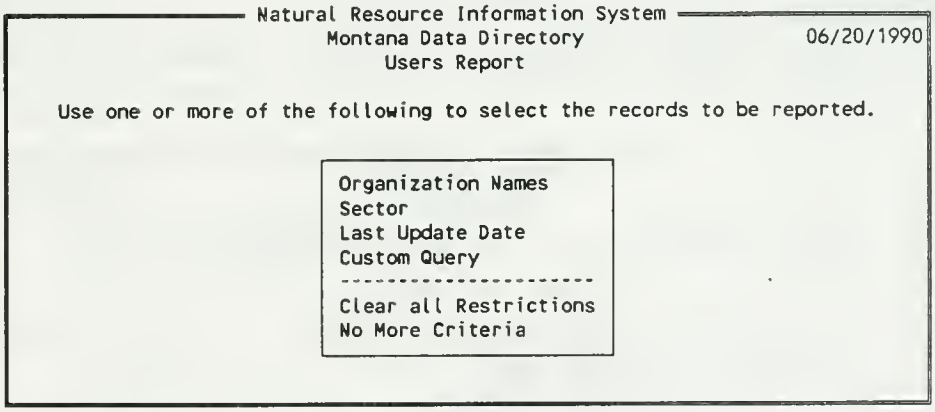


Figure 9.1. Select/Change the Report Content

REMINDER!
To make selections from pick lists, position the highlight bar on each of the items you want selected and press Enter. When you press Enter an arrow symbol will mark the item. You can remove the arrow and cancel the selection of the item by highlighting the item again and pressing Enter a second time. When you have completed your selections, press **Ctrl-Enter**.

When the menu appears, select **Organization Names** and the next screen will appear (Figure 9.2). Select **Bureau of Indian Affairs** and **Dept. Natural Resources & Conservation.** Press the Exit key to return to the opening screen (Figure 7.3).

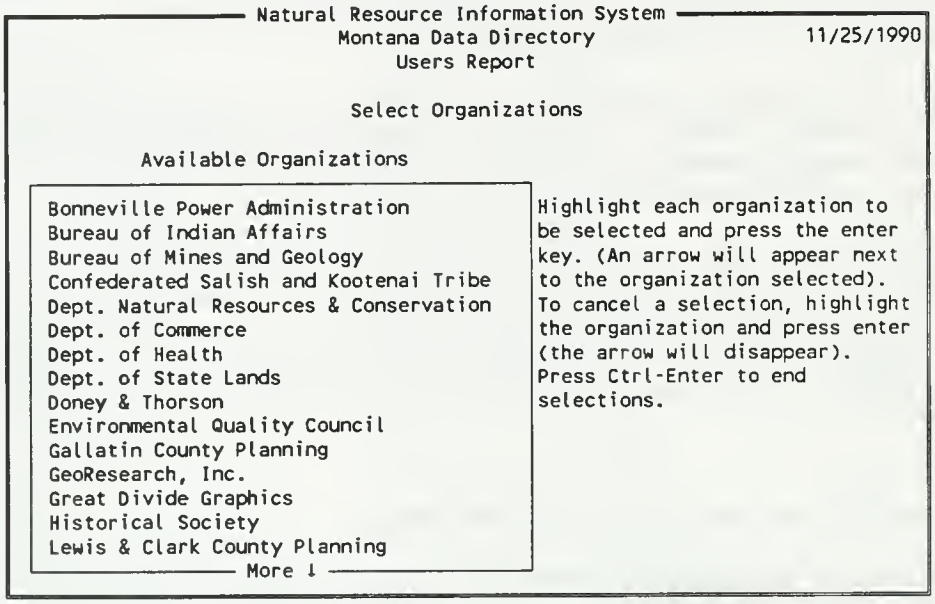

Natural Resource Information System
Montana Data Directory
11/25/1990
Users Report
Select Organizations
Available Organizations
Bonneville Power Administration
Bureau of Indian Affairs
Bureau of Mines and Geology
Confederated Salish and Kootenai Tribe
Dept. Natural Resources & Conservation
Dept. of Commerce
Dept. of Health
Dept. of State Lands
Doney & Thorson
Environmental Quality Council
Gallatin County Planning
GeoResearch, Inc.
Great Divide Graphics
Historical Society
Lewis & Clark County Planning
More ↓
Highlight each organization to be selected and press the enter key. (An arrow will appear next to the organization selected). To cancel a selection, highlight the organization and press enter (the arrow will disappear). Press Ctrl-Enter to end selections.

Figure 9.2. Select Organization Names

SELECTING THE REPORT FORMAT. Now you need to specify how much information from the retrieved records will be included in the report. Choose **Select/Change the report format** from the opening screen (Figure 7.3). The next menu will appear (Figure 9.3).

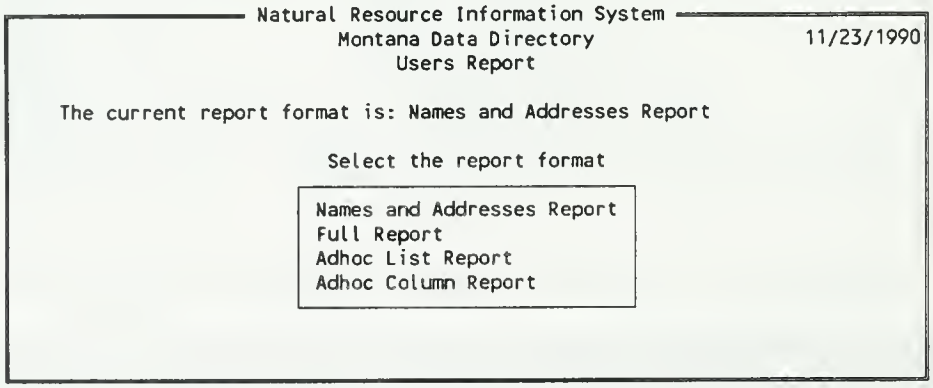


Figure 9.3. Select the Report Format

The different types of reports are described beginning with Section 9.4. For this retrieval, choose the first menu, **Names and Addresses Report.** The opening screen (Figure 7.3) will return after you've made your selection.

SELECTING THE RIGHT DATA INDEX. The next step is to activate the appropriate data index for the type of search you are doing.

On the opening screen (Figure 7.3), choose **Select/Change the record order in report.** The menu in Figure 9.4 will appear.

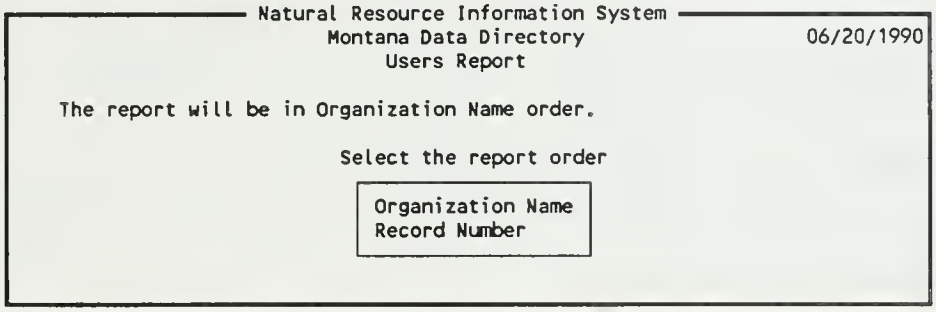


Figure 9.4. Select the Report Order

Since we are searching for entries with specific organization names, select **Organization Name** and you will be returned to the opening screen (Figure 7.3).

REVIEWING YOUR SELECTIONS. At this point, the required selections are completed. Review the selections you've made to check for errors or omissions. Select **Display the report designed** from the opening screen (Figure 7.3), to view your retrieval criteria (Figure 9.5).

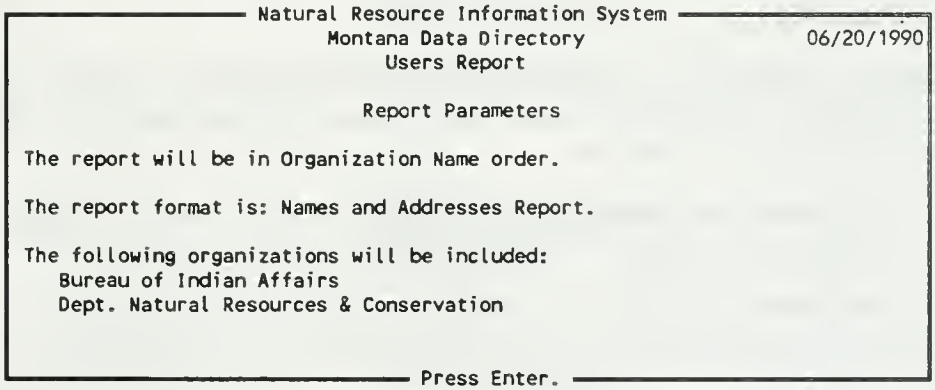

Natural Resource Information System
Montana Data Directory
Users Report
06/20/1990
Report Parameters
The report will be in Organization Name order.
The report format is: Names and Addresses Report.
The following organizations will be included:
Bureau of Indian Affairs
Dept. Natural Resources & Conservation
Press Enter.

Figure 9.5. Display the Report Designed

CORRECTING MISTAKES OR CHANGING SELECTIONS. If you notice a mistake on this screen, you can go back to the appropriate section on the opening screen (Figure 7.3) and make the required change.

PRODUCE THE REPORT. At this point, you are ready to run the retrieval for any users whose organization is the Bureau of Indian Affairs or the Dept. Natural Resources & Conservation. There are several options to run the retrieval and produce the report:

1. Count the number of records which meet your selected criteria,
2. Display the report to the screen,

3. Send the report to the printer, or
4. Send the output to a text file.

For this exercise, select **Count the records** from the opening screen (Figure 7.3). The program will 'crank away' for a short time and then indicate 15 records with the selected organization names have been located (Figure 9.6).

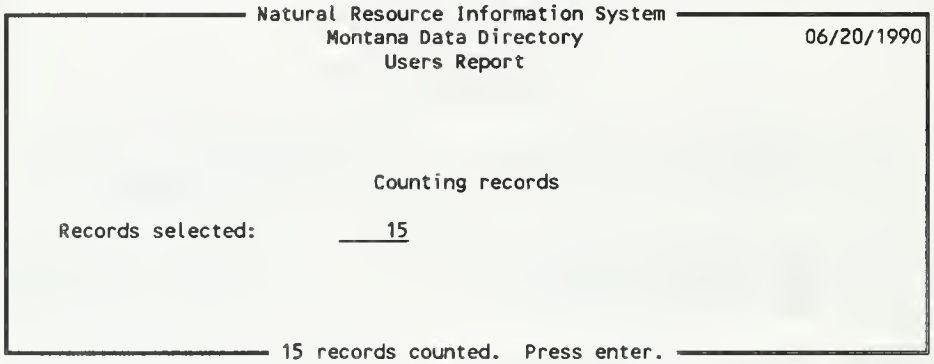


Figure 9.6. Counting Records

The next example will show you another type of retrieval and how to clear previous selections before running another search.

9.2 Searching by Last Update Date

SELECTING RECORDS IN REPORT. After choosing **Select/Change the report content** from the opening screen (Figure 7.3), the screen in Figure 9.7 will appear.

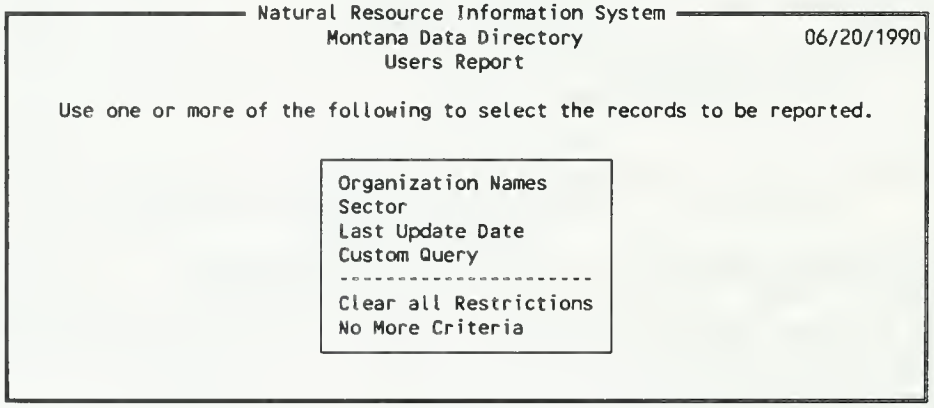


Figure 9.7. Select/Change the Report Content

Clearing selection criteria. In this example, we want to search by **Last Update Date.** If you select the **Last Update Date** option and enter dates without first clearing all previous selections, you will wind up searching by both the organization name selections of the previous search, and the last update dates you enter now. Your search will be unsuccessful, unless

you happen to choose last update dates for records found with the organization names you entered previously.

IMPORTANT!
As a rule it is a good idea to clear old search criteria before you begin a new search. If you are unsuccessful in a search where you expect results, select **Display the report designed** from the opening screen to make sure you have not forgotten to clear previous search criteria.

Clear the **Organization Name** restrictions by choosing **Clear all restrictions** and the program will tell you **All record restrictions have been cleared. Press enter.** Once you press Enter the previous screen (Figure 9.7) will return.

Entering new selection criteria. Selecting Last Update Date will bring up the screen shown in Figure 9.8a.

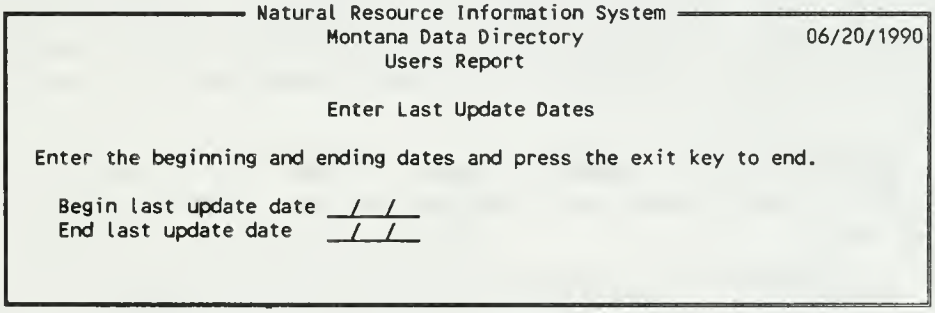

Natural Resource Information System
Montana Data Directory
06/20/1990
Users Report
Enter Last Update Dates
Enter the beginning and ending dates and press the exit key to end.
Begin last update date __/__/__
End last update date __/__/__

Figure 9.8a. Enter Last Update Dates

You can enter up to 25 ranges of dates to search. For this example enter **10/01/89** and **12/31/99**. The screen shown in Figure 9.8b will appear.

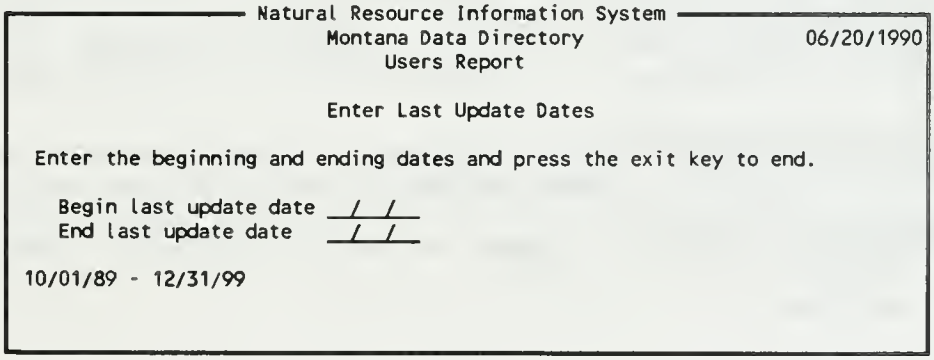

Natural Resource Information System
Montana Data Directory
06/20/1990
Users Report
Enter Last Update Dates
Enter the beginning and ending dates and press the exit key to end.
Begin last update date __/__/__
End last update date __/__/__
10/01/89 - 12/31/99

Figure 9.8b. Enter Last Update Dates

The program displays each range as it is entered. Press the Exit key to stop entering date ranges and the **Select/Change** the

Report Content screen will reappear. Press the Exit key once again and you will return to the opening screen (Figure 7.3).

SELECTING THE REPORT FORMAT. Now choose **Select/Change the report format** from the opening screen (Figure 7.3). Choose **Full Report** from the report selection screen (Figure 9.9).

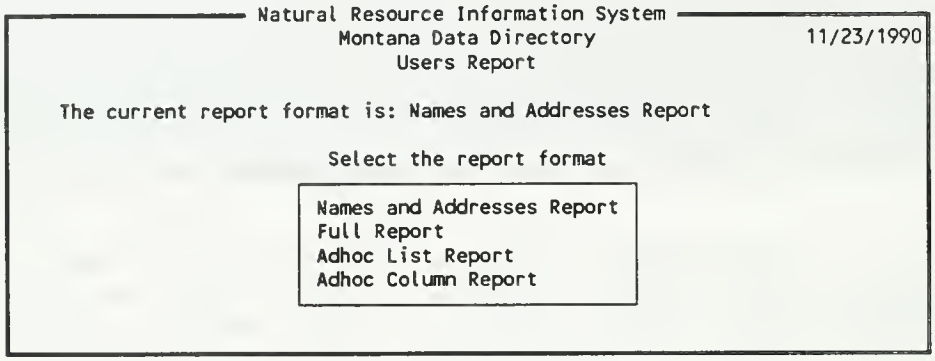


Figure 9.9. Select the Report Format

CHANGING THE REPORT ORDER. Sometimes when you make changes in your retrieval, you will need to decide if you should activate a different data index to make the retrieval run faster. Because there is no data index that corresponds directly to last update dates, the entire data base will be searched. For the present example, the options are:

1. **Activate the Record Number order.** This means the search will run somewhat faster as no actual index is being used.

2. **Leave the organization name index activated.** Doing this causes the program to use the organization name index. This may result in the search running somewhat slower.

To speed the retrieval, it is best to reduce the number of records the program has to search. In this example neither **Record Number** nor **Organization Name** will reduce the number of records that have to be searched. Choosing **Record Number** will be somewhat faster but choosing **Organization Name** may be more aesthetically pleasing. For this example, select **Record Number**.

REVIEWING YOUR SELECTIONS. Review the settings to see if your retrieval is ready to be executed (Figure 9.10).

PRODUCE THE REPORT. Press enter to return to the opening screen (Figure 7.3). You can now select any of the **PRODUCE THE REPORT** options.

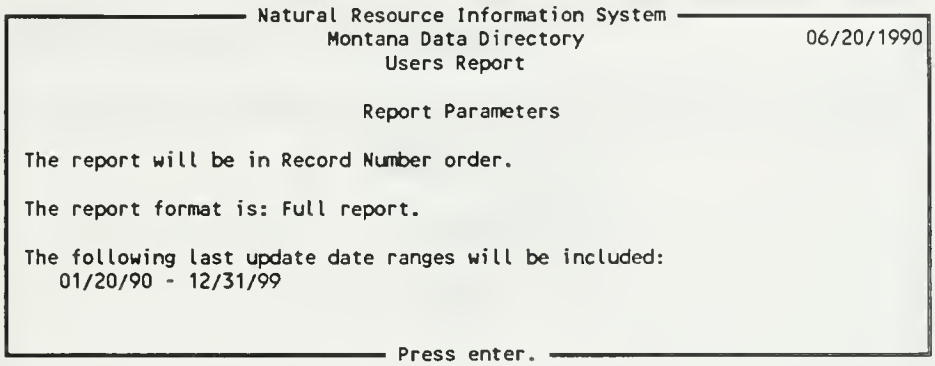

Natural Resource Information System
Montana Data Directory
Users Report
06/20/1990
Report Parameters
The report will be in Record Number order.
The report format is: Full report.
The following last update date ranges will be included:
01/20/90 - 12/31/99
Press enter.

Figure 9.10. Display the Report Designed

9.3 How to Design a Custom Query

The previous examples show you the kinds of searches that can be constructed using the pre-set menus. However, for some users, such retrievals may not be specific enough, or may provide too much or too little information.

To overcome these limitations, we have included the capability to construct very focused searches and report formats. In this manual, we refer to these restrictive, focused searches as Custom Queries and Adhoc Reports.

The Custom Queries can, for example, be used to locate users which:

1. Have a FTS phone number.
2. Are located in the western part of Montana.
3. Are in state government.

To create a Custom Query you will need a fairly good working knowledge of the Data Directory database structures and be able to write search expressions in dBASE III+ style. Specifically, you must determine which of the several Data Directory databases (see Appendix B) you need to use and the name of the field, or fields, you wish to search. The Users Report only uses the USER database. (Refer to Section 9.4 for more advice on Custom Queries.)

SELECTING THE REPORT CONTENT. Choose the **Select/Change the report content** from the opening screen (Figure 7.3). From the next screen that appears as shown in Figure 9.11, choose **Custom Query** and the screen shown in Figure 9.12 will appear.

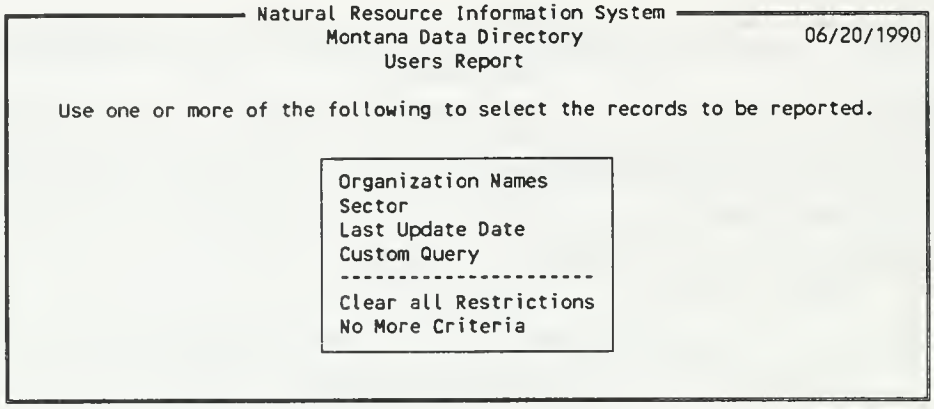


Figure 9.11. Select/Change the Report Content

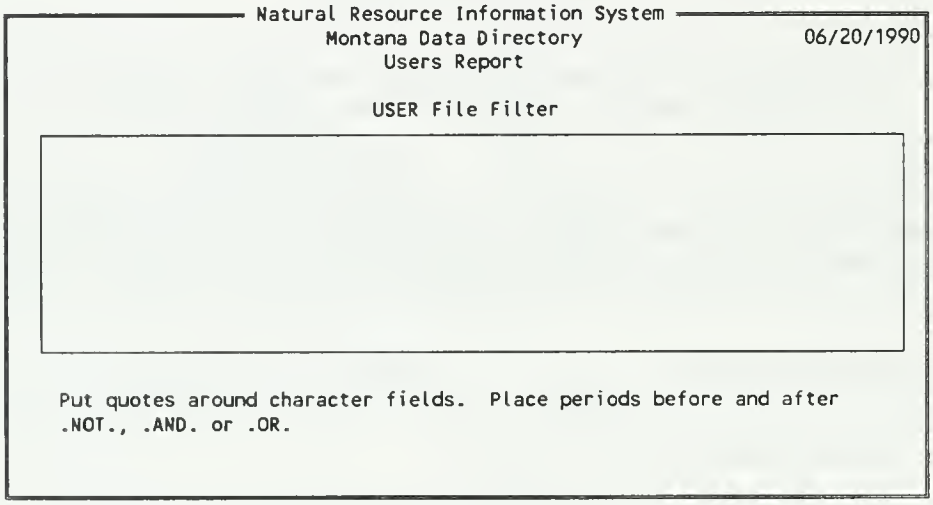


Figure 9.12. Enter USER File Filter

This screen presents you with an area where you will type in your Custom Query expression. Several things are critical here. First, you must know the precise name of the field(s) you intend to use and the type of field you are working with, that is, whether it is a character, numeric, date, or logical field. This information is available in Appendix B. Second, you must type the expression in a way that conforms to dBASE III+ syntax. This screen (Figure 9.12) and other similar screens provide you with some explanation.

For this example, we want to locate users that have a FTS phone number. Therefore, the search expression to enter is shown in Figure 9.13.

Once you finish typing the expression, press return and the program will check to see whether your expression is a valid dBASE III+ expression. An error message will appear if you have made a mistake and you will have to re-enter the expression correctly before the program will allow you to continue. If you

are unable to enter a valid expression, erase the entire expression and press the Enter key.

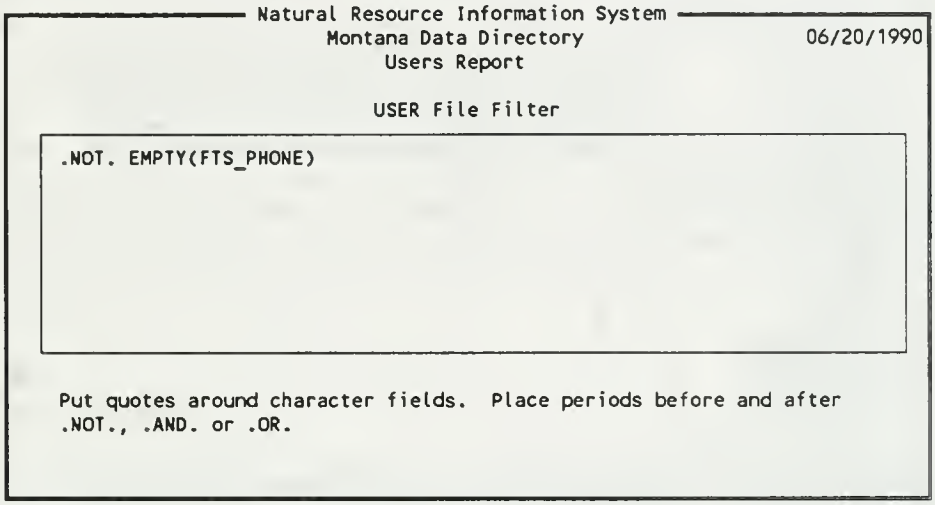


Figure 9.13. Enter USER File Filter after entry

If the syntax is correct, you will return you to the **Select/Change the report content** screen (Figure 9.11). Press the Exit key to return to the opening screen (Figure 7.3).

Before running the retrieval, select **Record Number** as the order. See Section 9.1 if you don't remember how to set the order.

SELECTING THE REPORT FORMAT. Now choose **Select/Change the report format** from the opening screen (Figure 7.3). You have the option of selecting from one of the pre-defined report formats, or you may choose to create your own report using the **Adhoc List Report** or the **Adhoc Column Report** format. The **Adhoc List Report** format is useful in making sure the records you want are actually being selected by allowing you to view those fields which contain the selection criteria you have entered. Select **Adhoc List Report** and the screen shown in Figure 9.14 will appear.

Our Custom Query examines the FTS Phone field; so for this example, select **Organization** and **FTS Phone**.

REVIEWING YOUR SELECTIONS. From the opening screen (Figure 7.3), choose **Display the report designed** to see the screen in Figure 9.15 and to make sure your retrieval will provide the information you need.

PRODUCE THE REPORT. Now press Enter to return to the opening screen (Figure 7.3). You can now select any of the **PRODUCE THE REPORT** options. After you examine the report, you may want to try some other Custom Queries. After you have more experience with the Custom Query, you can try more complex retrievals.

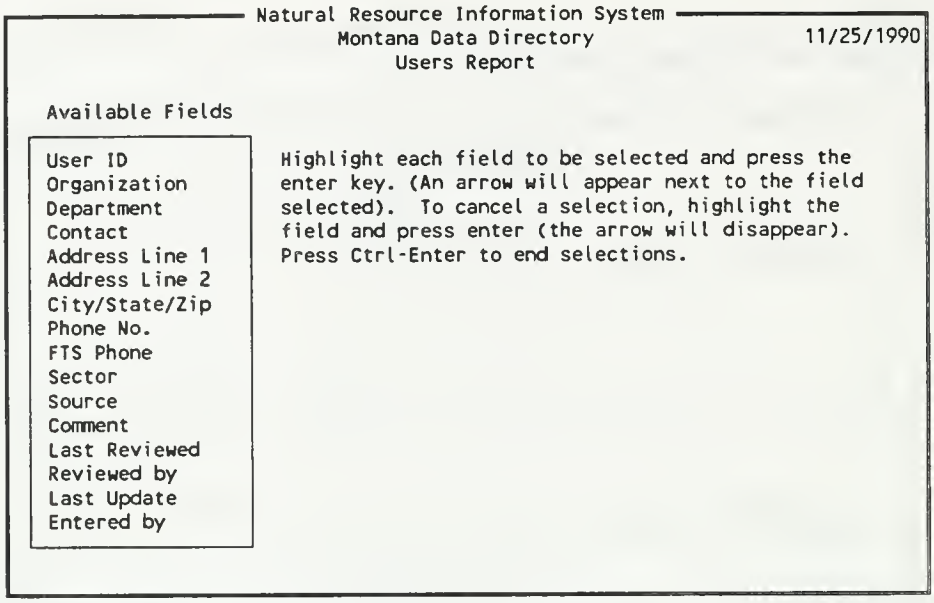


Figure 9.14. Available Fields for Adhoc List Report

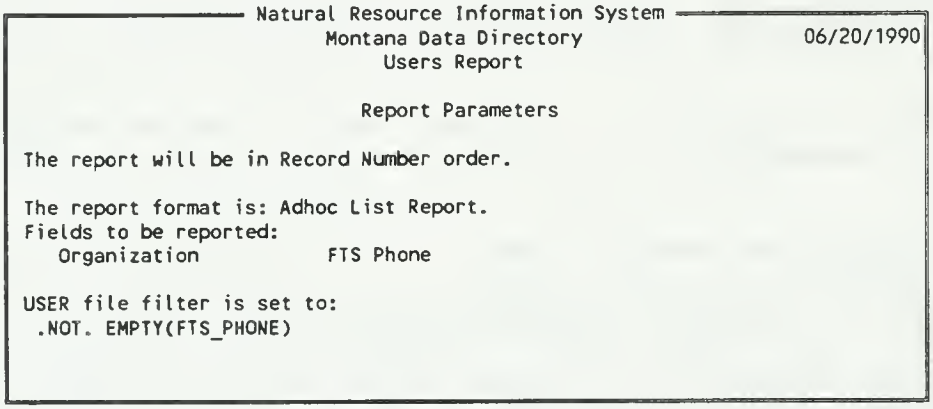


Figure 9.15. Display the Report Designed

9.4 Generating Reports

In the previous examples you have selected different types of reports and displayed them to the screen. In this section, re-enter the retrieval you designed in Section 9.1 **Searching by Organization Name** and print it out in each of the four available formats. This will help you to see which of the formats you prefer. Obviously, your preference may change depending on the kind of search you do, the kind of questions you need answered, and the level of detail you desire.

In addition to selecting the report format, the Users Report software also gives you several options to where you send the report. These options can be seen under **PRODUCE THE REPORT** on the opening screen (Figure 7.3) and are described in detail in Section 9.5.

9.5 Names and Addresses Report

From the opening screen, choose **Select/Change the report format** which will bring up the report selection screen shown in Figure 9.16.

Choose the **Names and Addresses Report** and when you return to the opening screen select **Print the report**. This report is a quick way to see names and addresses. However, if you need more detailed information you will have to use one of the other report formats. An example of a Names and Addresses Report is shown in Figure 9.19.

9.6 Full Report

From the opening screen, choose **Select/Change the report format**. Choose **Full Report** from the report selection screen. The report is shown in Figure 9.20. This report shows you the maximum amount of information available for the selected user.

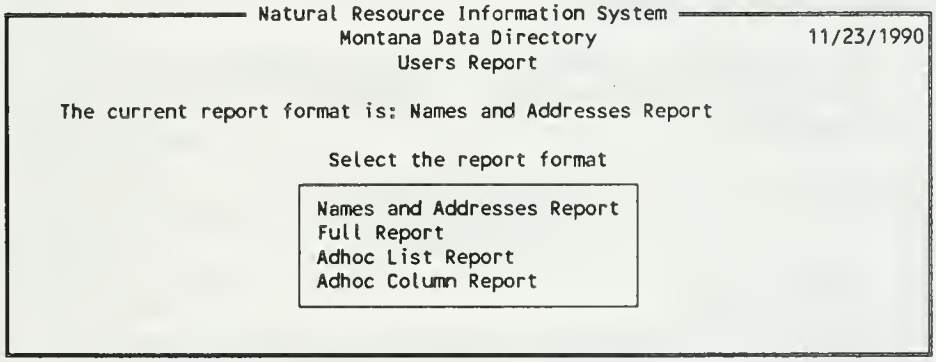


Figure 9.16. Select the Report Format

9.7 Adhoc List Report

From the opening screen, choose **Select/Change the report format**. Choose **Adhoc List Report** and the screen in in Figure 9.17 will appear. Select **Organization**, **Contact**, **Phone No.**, and **FTS Phone** from the list. Now return to the opening screen and print the report by choosing **Print the report**. This report shows you those fields you chose for the selected data. The report is shown in Figure 9.21.

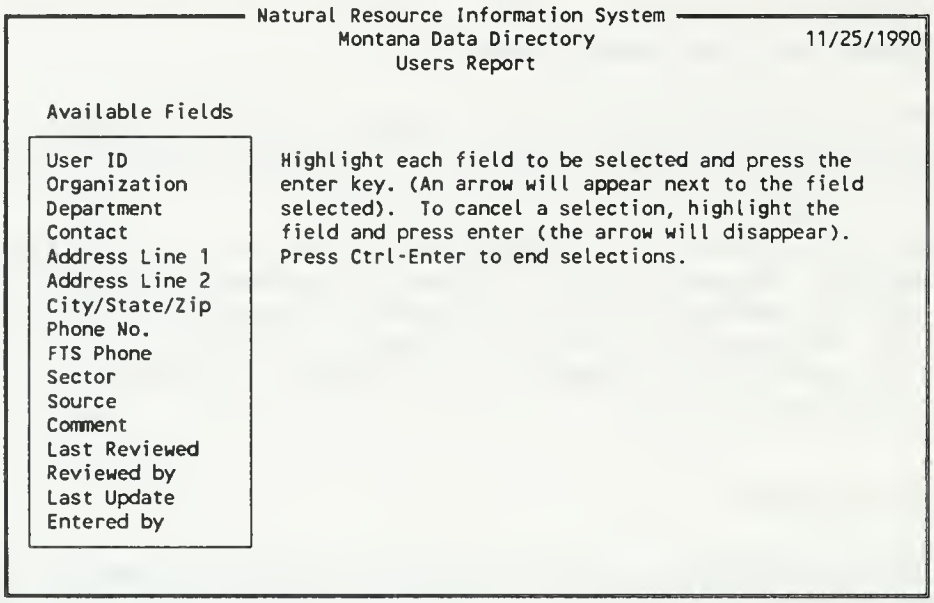


Figure 9.17. Available Fields for Adhoc List Report

9.8 Adhoc Column Report

From the opening screen, choose **Select/Change the report format.** Choose **Adhoc Column Report** and the screen in Figure 9.18 will appear.

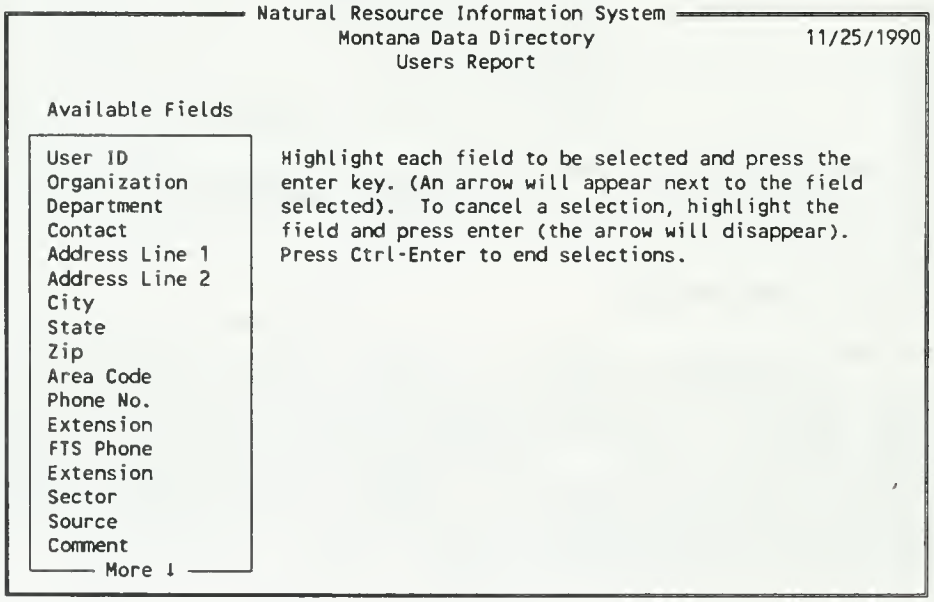


Figure 9.18. Available Fields for Adhoc Column Report

This report generates one record per row and shows as many columns as will fit in one row no matter how many fields you select. Select **Organization**, **Contact**, **Area Code**, and **Phone No.** from the list. Now return to the opening screen and print the report by choosing **Print the report**. The report is shown in

Figure 9.22. As you can see only parts of the **Organization** and **Contact** fields are reported. Which fields, and the width of each field is governed by the RPUSER.RPT file. See appendix G for more information.

```
                    Natural Resource Information System          06/20/1990
                         Montana Data Directory
                              Users Report

Bureau of Indian Affairs
Luse, Don, Area Director
316 N. 26th Street
Billings, MT  59101
(406) 657-6145

Dept. Natural Resources & Conservation
Reserved Water Rights Compact Commis.
Freburg, Scott
1520 East Sixth Avenue
Helena, MT  59620-2301
(406) 444-6843

Dept. Natural Resources & Conservation
Facility Siting Bureau
Ring, Tom, Natural & Earth Sci Coord.
1520 E. Sixth Avenue
Helena, MT  59620
(406) 444-6785

Dept. Natural Resources & Conservation
Ames, Greg, Hydrosciences Section
1520 East Sixth Avenue
Helena, MT  59620
(406) 444-6692

Dept. Natural Resources & Conservation
Reller, Mark
1520 East Sixth Avenue
Helena, MT  59620-2301
(406) 444-6641

Dept. Natural Resources & Conservation
Water Rights Bureau
Kindle, Jim, Records Section
1520 East Sixth Avenue
Helena, MT  59620
(406) 444-6621

Dept. Natural Resources & Conservation
Tubbs, John, Economist
1520 East Sixth Avenue
Helena, MT  59620
(406) 444-6832
```

Figure 9.19. Example of Names and Addresses Report

```
                    Natural Resource Information System          06/20/1990
                         Montana Data Directory
                              Users Report

Bureau of Indian Affairs
Luse, Don, Area Director
316 N. 26th Street
Billings, MT  59101
(406) 657-6145
Sector:    Federal
Source:    GIS Survey
Entered/Updated on: 07/26/89  by: Kris Larson
```

Figure 9.20. Example of Full Report

```
                    Natural Resource Information System          11/25/1990
                         Montana Data Directory
                              Users Report


Organization:   Bureau of Indian Affairs
Contact:        Luse, Don, Area Director
Phone No.:      (406) 657-6145 Ext.
FTS Phone:                     Ext.

Organization:   Dept. Natural Resources & Conservation
Contact:        Freburg, Scott
Phone No.:      (406) 444-6843 Ext.
FTS Phone:                     Ext.

Organization:   Dept. Natural Resources & Conservation
Contact:        Ring, Tom, Natural & Earth Sci Coord.
Phone No.:      (406) 444-6785 Ext.
FTS Phone:                     Ext.

Organization:   Dept. Natural Resources & Conservation
Contact:        Ames, Greg, Hydrosciences Section
Phone No.:      (406) 444-6692 Ext.
FTS Phone:                     Ext.

Organization:   Dept. Natural Resources & Conservation
Contact:        Reller, Mark
Phone No.:      (406) 444-6641 Ext.
FTS Phone:                     Ext.

Organization:   Dept. Natural Resources & Conservation
Contact:        Kindle, Jim, Records Section
Phone No.:      (406) 444-6621 Ext.
FTS Phone:                     Ext.

Organization:   Dept. Natural Resources & Conservation
Contact:        Byron, Tim , Soil Scientist
Phone No.:      (406) 444-6642 Ext.
FTS Phone:                     Ext.

Organization:   Dept. Natural Resources & Conservation
Contact:        Dalby, Chuck
Phone No.:      (406) 444-6644 Ext.
FTS Phone:                     Ext.

Organization:   Dept. Natural Resources & Conservation
Contact:        Tubbs, John, Economist
Phone No.:      (406) 444-6832 Ext.
FTS Phone:                     Ext.
```

Figure 9.21. Example of Adhoc List Report

Natural Resource Information System 11/25/1990
Montana Data Directory
Users Report

Organization	Contact
Bureau of Indian Affairs	Luse, Don, Area Director
Dept. Natural Resources & Conservation	Freburg, Scott
Dept. Natural Resources & Conservation	Ring, Tom, Natural & Earth Sci Coord.
Dept. Natural Resources & Conservation	Ames, Greg, Hydrosciences Section
Dept. Natural Resources & Conservation	Reller, Mark
Dept. Natural Resources & Conservation	Kindle, Jim, Records Section
Dept. Natural Resources & Conservation	Byron, Tim , Soil Scientist
Dept. Natural Resources & Conservation	Dalby, Chuck
Dept. Natural Resources & Conservation	Tubbs, John, Economist
Dept. Natural Resources & Conservation	Shapley, Mark
Dept. Natural Resources & Conservation	DeLuca, Denise, Hydrologist
Dept. Natural Resources & Conservation	Cawfield, Larry
Dept. Natural Resources & Conservation	Glen McDonald
Dept. Natural Resources & Conservation	Rich Brauch
Dept. Natural Resources & Conservation	Jim Kindle

Figure 9.22. Example of Adhoc Column Report

10.0 PROJECTS REPORT

If you have a menu program on your computer, choose the Projects Report. If you do not have a menu program, refer to Section 1.6 to start the program. As described in Section 7.3, the opening screen (Figure 7.3) will appear.

The following three examples are provided to show you how to use the Projects Report. If you make a mistake when you are going through these examples, just remember to use the Exit key to back up and return to the previous menu.

Please note that the Projects Report functions very similarly to the Data Sources Report described in Section 8.0. In the examples below we will refer to Section 8.0 where appropriate for a more in-depth discussion of a topic. On the other hand, some parts of Section 8.0 are repeated for clarity and convenience.

10.1 Searching by Title

SELECTING THE REPORT CONTENT. Choose **Select/Change the report content** from the opening screen (Figure 7.3). The screen in Figure 10.1 will appear.

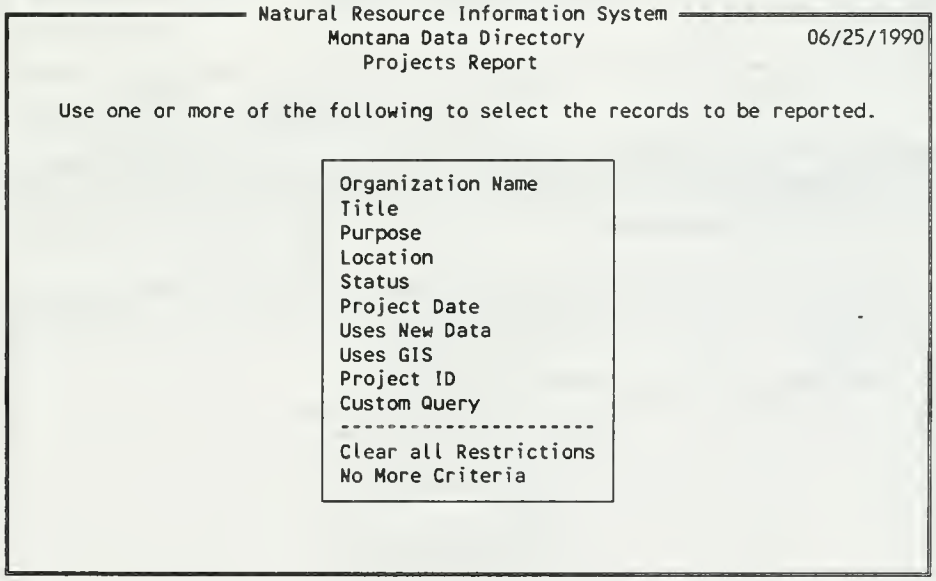


Figure 10.1. Select/Change the Report Content

When this menu appears select **Title** and the next screen will appear (Figure 10.2).

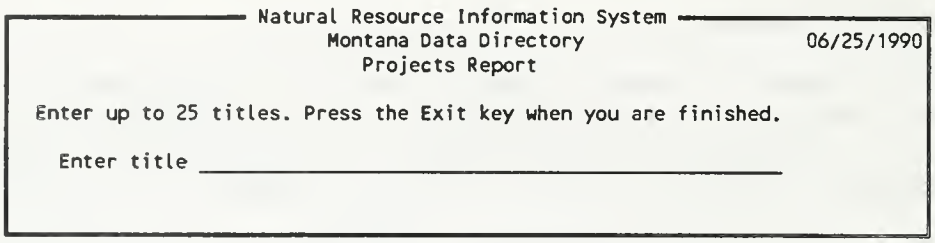

Natural Resource Information System
Montana Data Directory
Projects Report
06/25/1990
Enter up to 25 titles. Press the Exit key when you are finished.
Enter title

Figure 10.2. Enter Titles

As an example, enter **CLARK FORK RIVER WATER QUALITY.** Use the Exit key twice to return to the opening screen (Figure 7.3).

SELECTING THE REPORT FORMAT. Now choose **Select/Change the report format** from the opening screen (Figure 7.3). Choose **Brief Report** from the report selection screen (Figure 10.3).

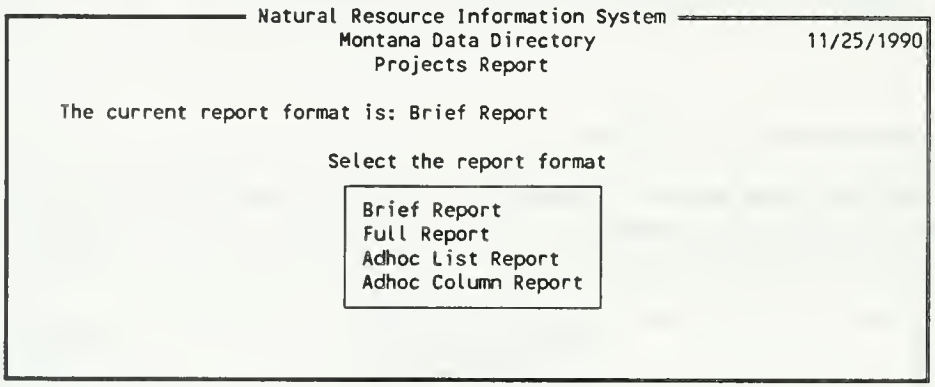


Figure 10.3. Select the Report Format

SELECTING THE REPORT ORDER. Choose **Select/Change the record order in report** from the opening menu (Figure 7.3). The menu in Figure 10.4 will appear.

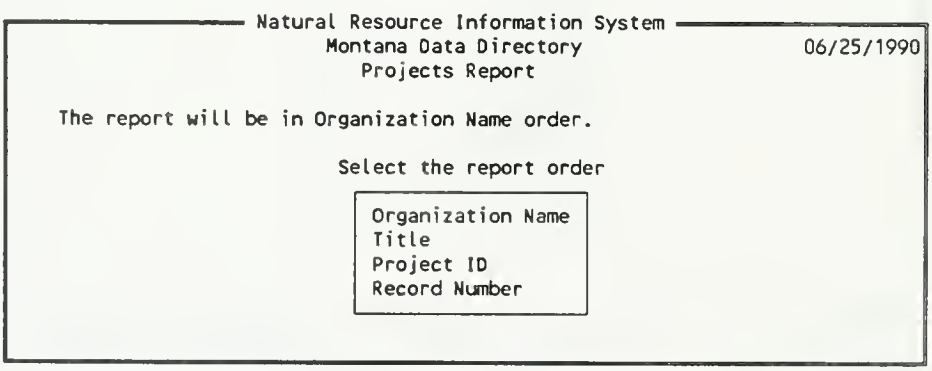


Figure 10.4. Select the Report Order

Since we are searching for projects with a specific title, select **Title** and you will be returned to the opening screen (Figure 7.3).

REVIEWING YOUR SELECTIONS. At this point the required selections are completed. Review the selections you've made to check for errors or omissions. Select **Display the report designed** from the opening screen (Figure 7.3), to view your retrieval criteria (Figure 10.5).

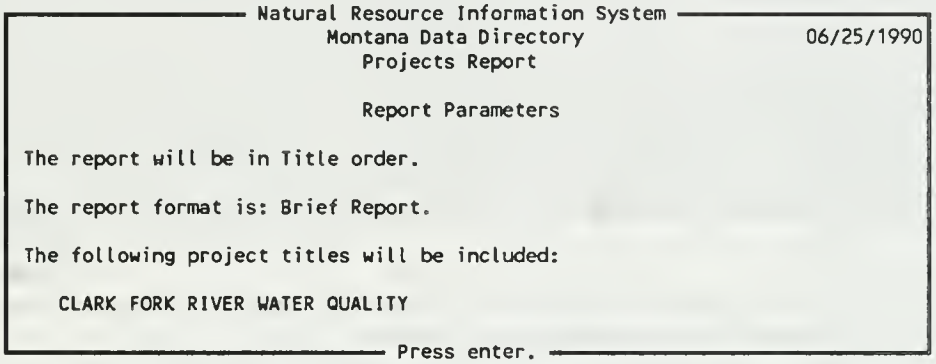


Figure 10.5. Display the Report Designed

CORRECTING MISTAKES OR CHANGING SELECTIONS. If you notice a mistake on this screen, you can go back to the appropriate section on the opening screen (Figure 7.3) and make the required change.

PRODUCE THE REPORT. Press enter to return to the opening screen (Figure 7.3). You can now select any of the **PRODUCE THE REPORT** options.

10.2 Searching by Uses New Data

SELECTING RECORDS IN REPORT. After choosing **Select/Change the report content** from the opening screen (Figure 7.3), the screen in Figure 10.6 will appear.

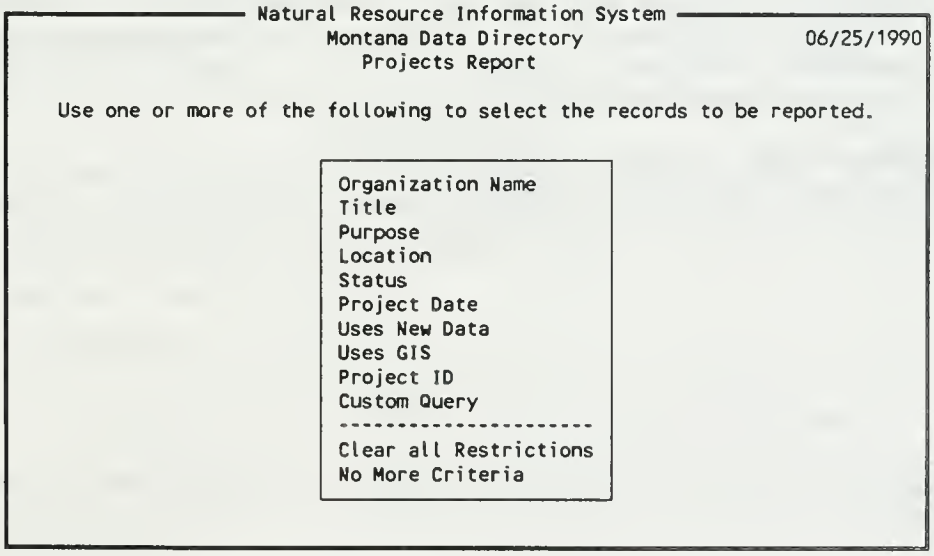


Figure 10.6. Select/Change the Report Content

Clearing selection criteria. In this example, we want to search by **Uses New Data.** Clear the old selection criteria by selecting **Clear all Restrictions.**

IMPORTANT!
As a rule it is a good idea to clear old search criteria before you begin a new search. If you are unsuccessful in a search where you expect results, select **Display the report designed** from the opening screen to make sure you have not forgotten to clear previous search criteria.

Entering new selection criteria. Selecting **Uses New Data** will bring up the screen shown in Figure 10.7.

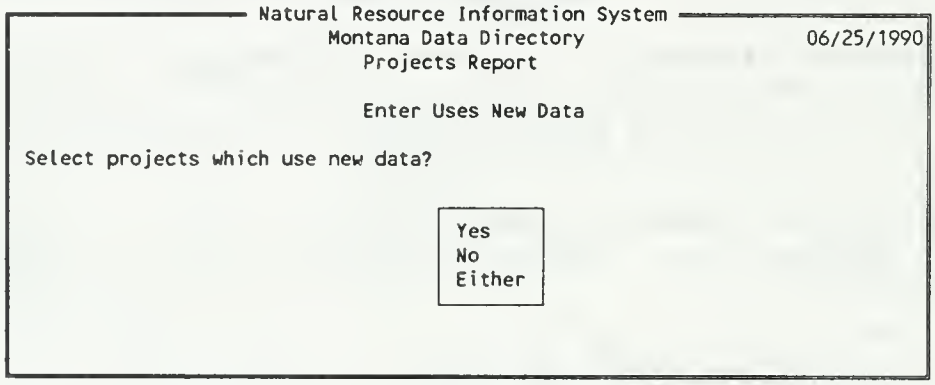


Figure 10.7. Enter Uses New Data

You can require the program to select projects which use new data by choosing **Yes**. You can require the program to select projects that do not use new data by choosing **No**. If you want the program to ignore whether or not the project uses new data choose **Either.** You will be returned to the **Select/Change the report content** screen (Figure 10.6). Press the Exit key to return to the opening screen (Figure 7.3).

SELECTING THE REPORT FORMAT. Now choose **Select/Change the report format** from the opening screen (Figure 7.3). Choose **Full Report** from the report selection screen (Figure 10.8).

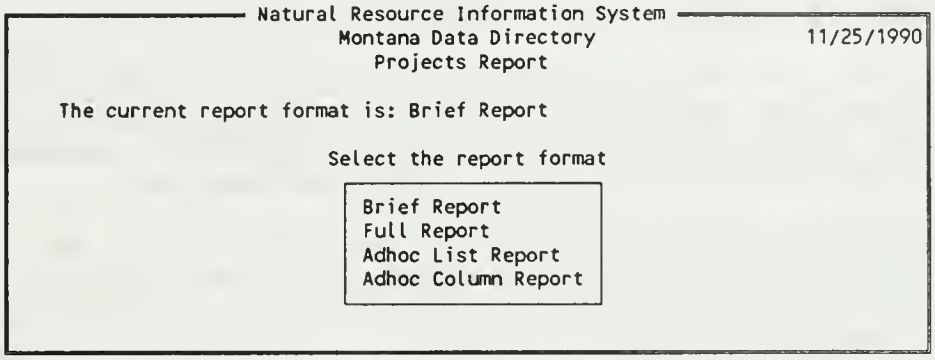


Figure 10.8. Select the Report Format

CHANGING THE REPORT ORDER. Sometimes when you make changes in your retrieval, you will need to decide if you should activate a different data index to make the retrieval run faster. Because there is no data index that corresponds directly to **Uses New Data**, the entire data base will be searched. For the present example, the options are:

1. **Activate the Record Number order.** This means the search will run somewhat faster as no actual index is being used.

2. **Leave the title index activated.** Doing this causes the program to use the title index. This may result in the search running somewhat slower.

To speed the retrieval, it is best to reduce the number of records the program has to search. In this example neither **Record Number** nor **Title** will reduce the number of records that have to be searched. Choosing **Record Number** will be somewhat faster but choosing **Title** may be more aesthetically pleasing. For this example, choose **Record Number**.

REVIEWING YOUR SELECTIONS. Review the settings to see if your retrieval is ready to be executed (Figure 10.9).

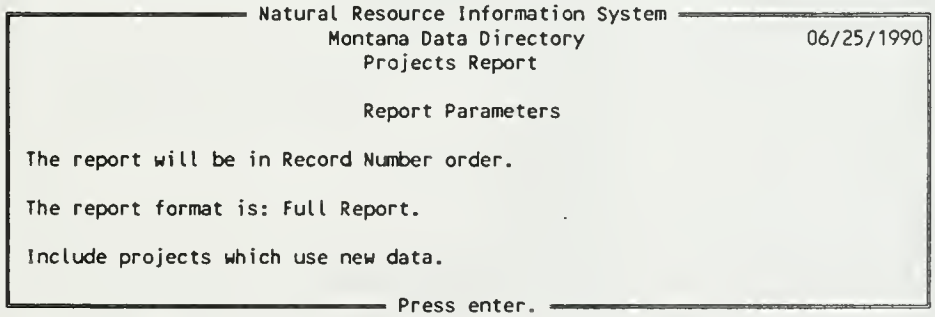


Figure 10.9. Display the Report Designed

PRODUCE THE REPORT. Press enter to return to the opening screen (Figure 7.3). You can now select any of the **PRODUCE THE REPORT** options.

10.3 How to Design a Custom Query

The previous examples show you the kinds of searches that can be constructed using the pre-set menus. However, for some projects, such retrievals may not be specific enough, or may provide too much or too little information.

To overcome these limitations, we have included the capability to construct very focused searches and report formats. In this manual, we refer to these restrictive, focused searches as Custom Queries and Adhoc Reports.

The Custom Queries can, for example, be used to locate projects which:

1. Use ARC/INFO, a GIS software.
2. Are located in the western part of Montana.
3. Are managed by state government agencies.

To create a Custom Query you will need a fairly good working knowledge of the Data Directory database structures and be able to write search expressions in dBASE III+ style. Specifically, you must determine which of the several Data Directory databases (see Appendix B) you need to use and the name of the field, or fields, you wish to search. The Projects Report only uses the Projects database. (Refer to Section 8.4 for more advice on Custom Queries.)

SELECTING THE REPORT CONTENT. Choose the **Select/Change the report content** from the opening screen (Figure 7.3). From the next screen that appears as shown in Figure 10.10, choose **Custom Query.**

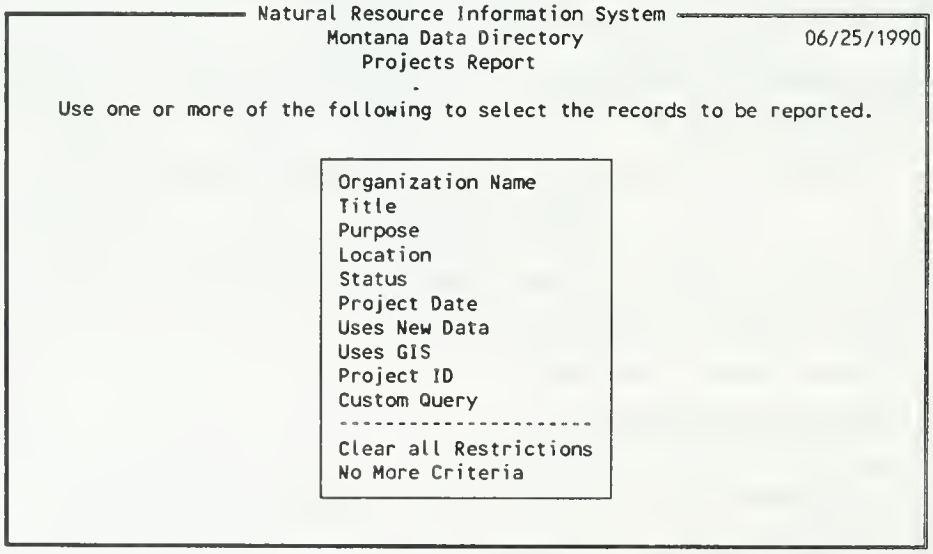


Figure 10.10. Select/Change the Report Content

The screen shown in Figure 10.11 will appear after you press the Enter key.

This screen presents you with an area where you will type in your Custom Query expression. Several things are critical here. First, you must know the precise name of the field(s) you intend to use and the type of field you are working with, that is, whether it is a character, numeric, date, or logical field. This information is available in Appendix B. Second, you must type the expression in a way that conforms to dBASE III+ syntax. This screen (Figure 10.11) and other similar screens provide you with some explanation.

For this example, we want to locate projects that use ARC/INFO software. Therefore, the search expression to enter is shown in Figure 10.12.

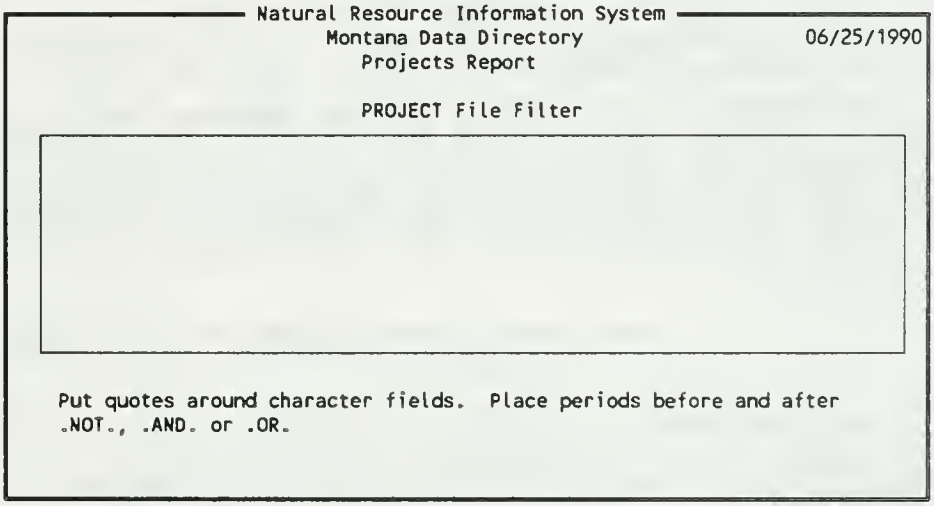


Figure 10.11. Enter Project File Filter

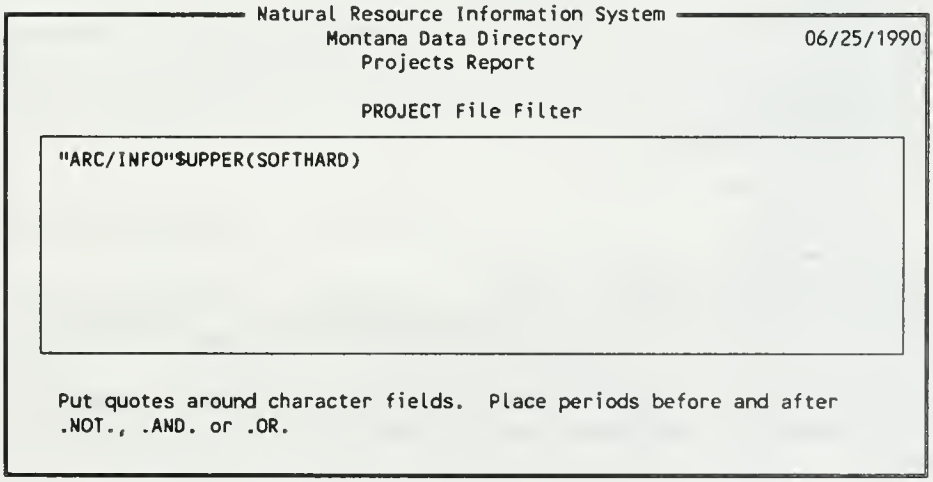


Figure 10.11. Enter Project File Filter after entry

Once you finish typing the expression, press return and the program will check to see whether your expression is a valid dBASE III+ expression. An error message will appear if you have made a mistake and you will have to re-enter the expression correctly before the program will allow you to continue. If you are unable to enter a valid expression, erase the entire expression and press the Enter key.

If the syntax is correct, you will return to the **Select/Change the report content** screen (Figure 10.10). Press the Exit key to return to the opening screen (Figure 7.3).

Before running the retrieval, select **Record Number** as the order. See Section 8.1 if you don't remember how to set the order.

SELECTING THE REPORT FORMAT. Now choose **Select/Change the report format** from the opening screen (Figure 7.3). You have the option of selecting from one of the pre-defined report formats, or you may choose to create your own report using the **Adhoc List Report** or the **Adhoc Column Report** format. The **Adhoc List Report** format is useful in making sure the records you want are being selected by allowing you to view those fields which actually contain the selection criteria you have entered. Select **Adhoc List Report** and the screen shown in Figure 10.13 will appear.

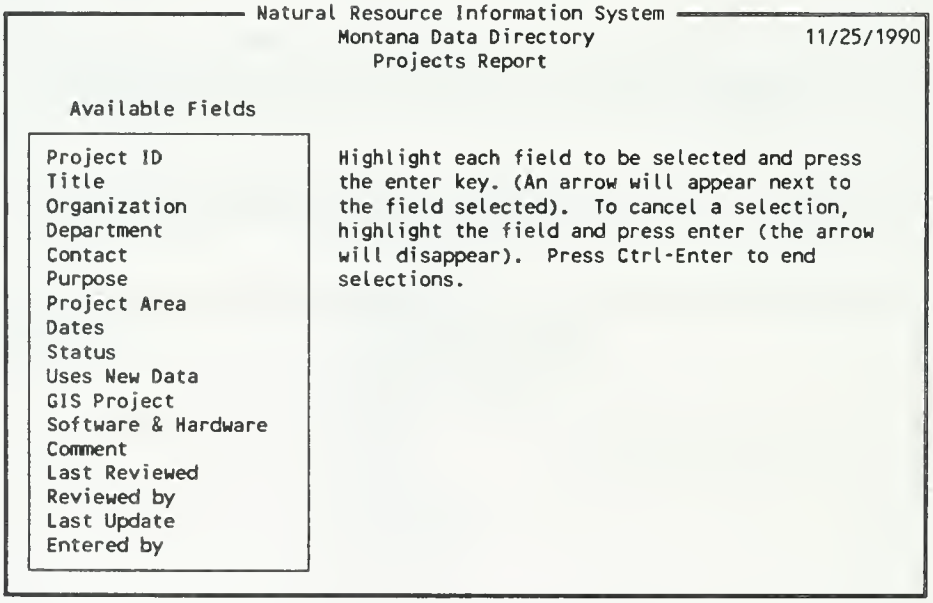


Figure 10.13. Available Fields for Adhoc List Report

Our Custom Query examines the Software & Hardware field, so for this example select **Title**, **GIS Project**, and **Software & Hardware**.

REVIEWING YOUR SELECTIONS. From the opening screen (Figure 7.3), choose **Display the report designed** to see the screen in Figure 10.14 and to make sure your retrieval will provide the information you need.

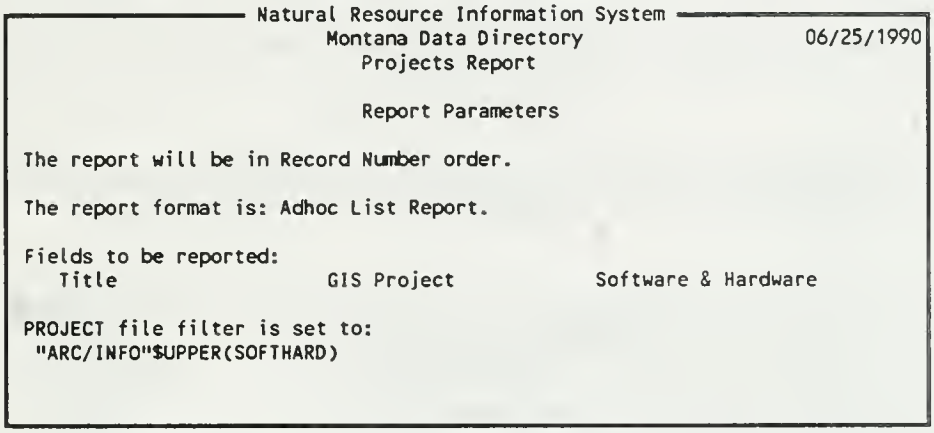


Figure 10.14. Display the Report Designed

PRODUCE THE REPORT. Now press Enter to return to the opening screen (Figure 7.3). You can now select any of the **PRODUCE THE REPORT** options. After you examine the report, you may want to try some other Custom Queries. After you have more experience with the Custom Query, you can try more complex retrievals.

10.4 Generating Reports

In the previous examples you have selected different types of reports and displayed them to the screen. In this section, re-enter the retrieval you designed in Section 10.1 **Searching by Title** and print it out in the four available formats to see which of the formats you prefer.

In addition to selecting the report format, the Projects Report software also gives you several options to where you send the report. These options can be seen under **PRODUCE THE REPORT** on the opening screen (Figure 7.3) and are described in detail in Section 10.5.

10.5 Brief Report

From the opening screen, choose **Select/Change the report format** which will bring up the report selection screen shown in Figure 10.15. Choose the **Brief Report** and when you return to the opening screen select **Print the report.** This report is a quick way to see the title, organization, and contact for a project. However, if you need more detailed information you will have to use one of the other report formats. The printout is shown in Figure 10.16.

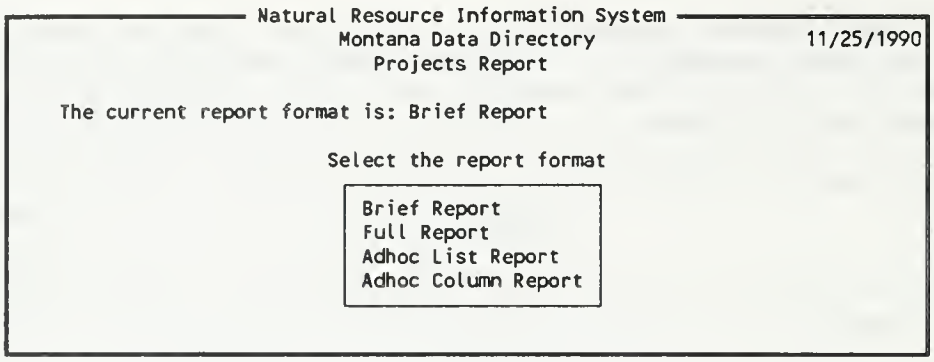


Figure 10.15. Select the Report Format

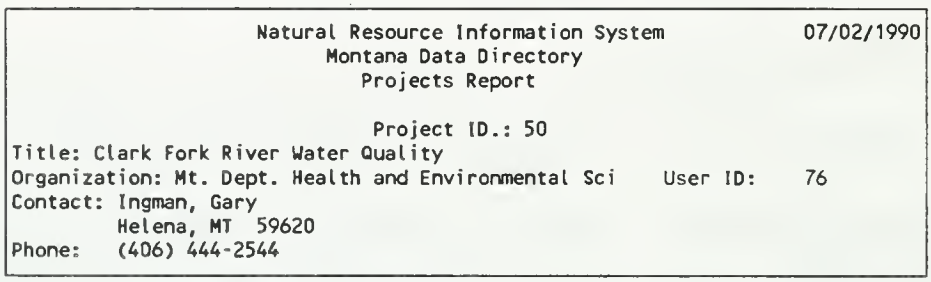


Figure 10.16. Example of Brief Report

10.6 Full Report

From the opening screen, choose **Select/Change the report format.** Choose **Full Report** from the report selection screen. The report is shown in Figure 10.17. This report shows you the maximum amount of information available for each project selected in the report.

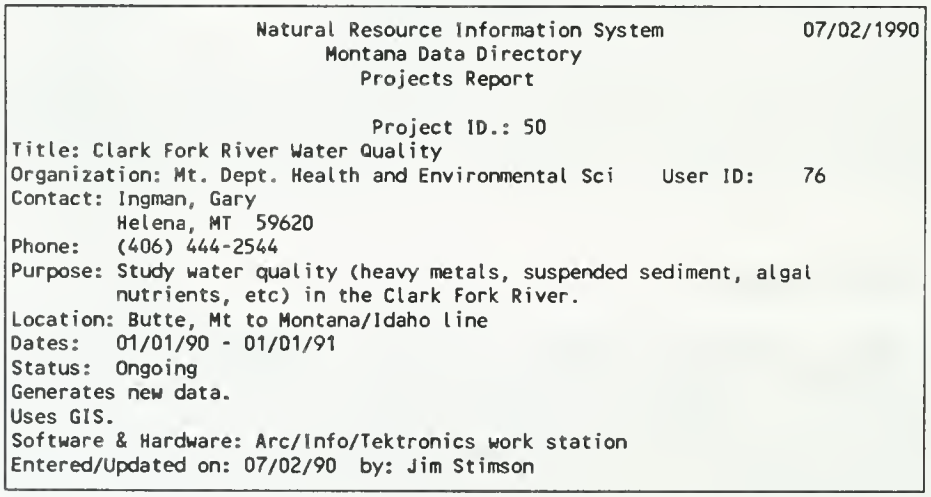

Natural Resource Information System
07/02/1990
Montana Data Directory
Projects Report
Project ID.: 50
Title: Clark Fork River Water Quality
Organization: Mt. Dept. Health and Environmental Sci
User ID: 76
Contact: Ingman, Gary
Helena, MT 59620
Phone: (406) 444-2544
Purpose: Study water quality (heavy metals, suspended sediment, algal
nutrients, etc) in the Clark Fork River.
Location: Butte, Mt to Montana/Idaho line
Dates: 01/01/90 - 01/01/91
Status: Ongoing
Generates new data.
Uses GIS.
Software & Hardware: Arc/Info/Tektronics work station
Entered/Updated on: 07/02/90 by: Jim Stimson

Figure 10.17. Example of Full Report

10.7 Adhoc List Report

From the opening screen, choose **Select/Change the report format.** Choose **Adhoc List Report** and the screen in in Figure 10.18 will appear. Select **Title, Organization,** and **Purpose** from the list. Now return to the opening screen and print the report by choosing **Print the report.** This report shows you those fields you chose for the selected data. The report is shown in Figure 10.19.

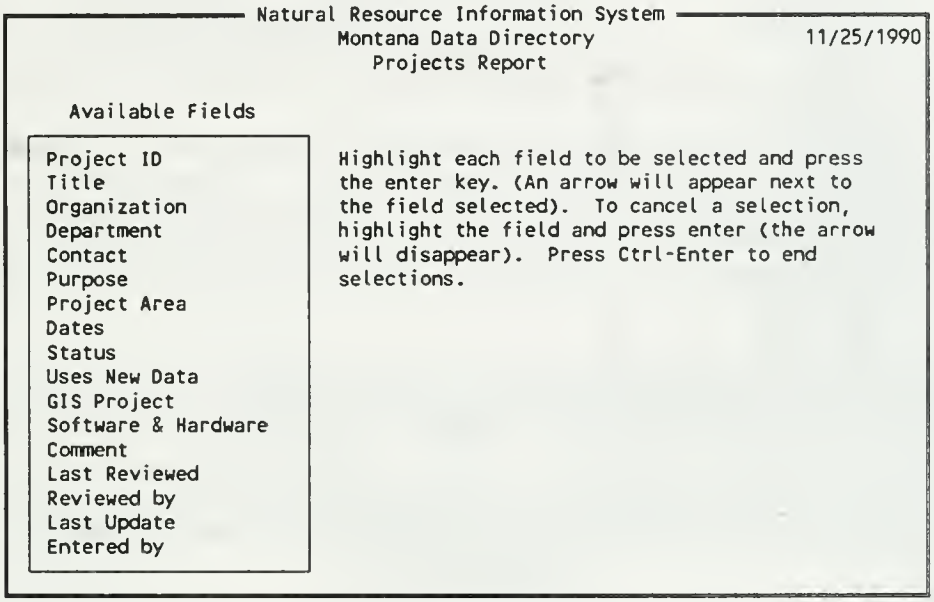


Figure 10.18. Available Fields for Adhoc List Report

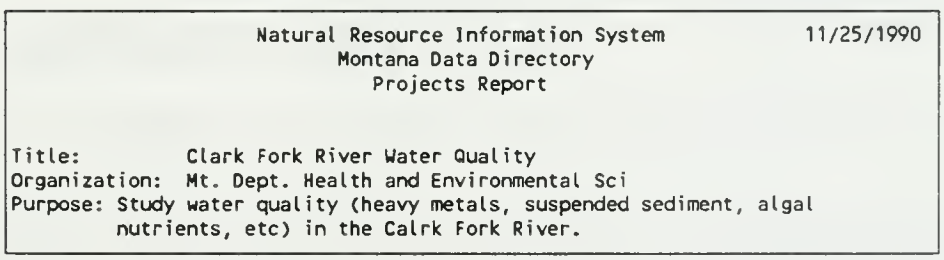

Natural Resource Information System
Montana Data Directory
Projects Report
11/25/1990
Title: Clark Fork River Water Quality
Organization: Mt. Dept. Health and Environmental Sci
Purpose: Study water quality (heavy metals, suspended sediment, algal nutrients, etc) in the Calrk Fork River.

Figure 10.19. Example of an Adhoc List Report

10.8 Adhoc Column Report

From the opening screen, choose **Select/Change the report format.** Choose **Adhoc Column Report** and the screen in Figure 10.20 will appear. This report generates one record per row and shows as many columns as will fit in one row no matter how many fields you select. Select **Title, Organization,** and **Project Area** from the list. Now return to the opening screen and print the report by choosing **Print the report.** The report is shown in Figure 10.21. As you can see only the **Title** and **Organization**

fields are reported. Which fields, and the width of each field is governed by the RPPROJ.RPT file. See appendix G for more information.

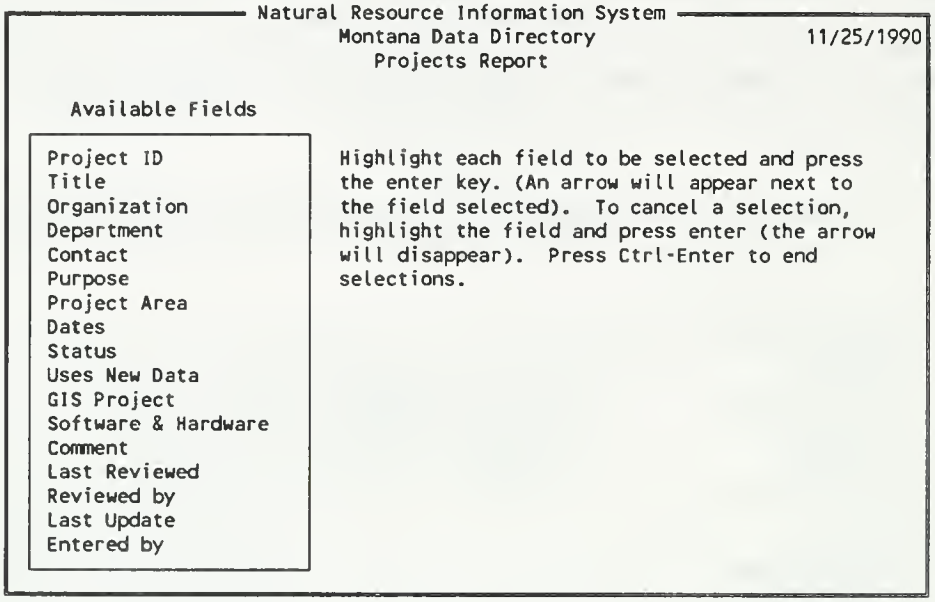


Figure 10.20. Available Fields for Adhoc Column Report

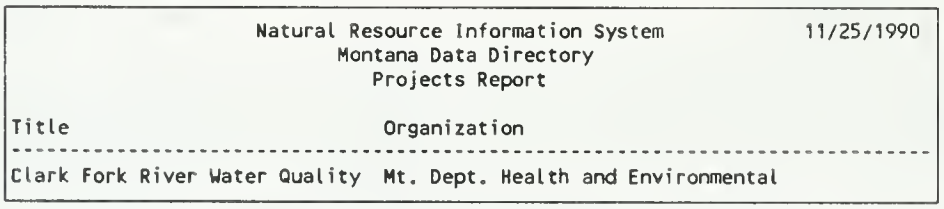


Figure 10.21. Example of an Adhoc Column Report

APPENDIX A

Installation

Installation of the Montana Data Directory is a two step process:

1) Install the System Utilities.
2) Install the Data Directory data and programs.

I Install the System Utilities

The System Utilities require approximately 500,000 bytes.

The system utilities are used to customize the Data Directory programs. They also include AUTOMENU, a shareware menu package, that creates a menu to run the Data Directory programs and cutomization utilities. (Shareware is software, commonly available on bulletin boards, that you can try before purchasing.)

The system utilities should be installed in a directory that DOS searches for programs. Typically, directories like "\DOS", "\BIN" or "\TOOLS" are used. You can, however, create your own directory, e.g., "C:\ UTIL" and include it in the PATH command in the AUTOEXEC.BAT file (See your DOS manual under "PATH" command and "AUTOEXEC.BAT" files for more information.)

To determine what directories DOS searches for programs type PATH at the DOS prompt:

```
C:\>PATH
PATH=C:\DOS;\C:\BATCH;C:\TOOLS
```

In this example, you could install the utilities in the C:\DOS, C:\BATCH, or C:\TOOLS directories.

To install the system utilities in a directory not currently in the PATH you can create a directory, for example, D:\UTIL by entering the following commands (shown in bold) at the DOS prompt:

```
C:\>D:
D:\>MD UTIL
D:\>CD UTIL
D:\UTIL>
```

The PATH is probably set by the AUTOEXEC.BAT file found in the root directory of the C drive. It might look similar to this:

```
C:
CD C:\
PATH=C:\DOS;C:\BATCH;C:\TOOLS
PROMPT $P$G
```

Use a text editor or word processor to change the AUTOEXEC.BAT file to read:

```
C:
CD C:\
PATH=C:\DOS;\C:\BATCH;C:\TOOLS;D:\UTIL
PROMPT $P$G
```

If you are using a word processor that adds special codes to a file be sure to save the file as a DOS text or ASCII file.

The next time you reboot the computer D:\UTIL will be included in the PATH. (See your DOS manual for more information about AUTOEXEC.BAT and PATH).

Copy the files from the System Utilities diskette to the directory and run SINSTALL. SINSTALL will extract the programs and files from their compressed format and erase the unneeded files.

II Install the Data Directory data and programs

Approximately 6,000,000 bytes are needed to install the Data Directory data and programs.

You should create a separate directory, for example, DATADIR, on which to install the Data Directory programs by entering the following commands (shown in bold) at the DOS prompt:

```
C:\>D:
D:\>MD DATADIR
D:\>CD DATADIR
D:\DATADIR>
```

Copy the Data Directory diskettes to the directory and run INSTALL. INSTALL will extract the programs and files from their compressed format and erase the unneeded files. Indices needed by the programs will be created the first time each of the programs are run.

III Starting the Data Directory programs

Included on the System Utilities diskette is AUTOMENU, a menu program. Included on the Data Directory diskettes is a batch file which will load AUTOMENU. To run a Data Directory program, change directories to the containing the Data Directory (e.g. D:\DATADIR), type DATADIR from the DOS prompt and AUTOMENU will be loaded. Select any of the Data Directory programs by typing the number in front of the menu item.

If you do not want to use AUTOMENU, proceed as follows:

1) From the DOS prompt, change to the directory containing the Data Directory programs.
2) To start the Data Sources Maintenance Utility, type EDDIR and press Enter.
3) To start the Data Sources Locations Maintenance Utility, type EDDIRLOC and press Enter.
4) To start the Users Maintenance Utility, type EDUSER and press Enter.
5) To start the Projects Maintenance Utility, type EDPROJ and press Enter.
6) To start the Data Sources Report, type RPDIR and press Enter.
7) To start the Users Report, type RPUSER and press Enter.
8) To start the Projects Report, type RPPROJ and press Enter.

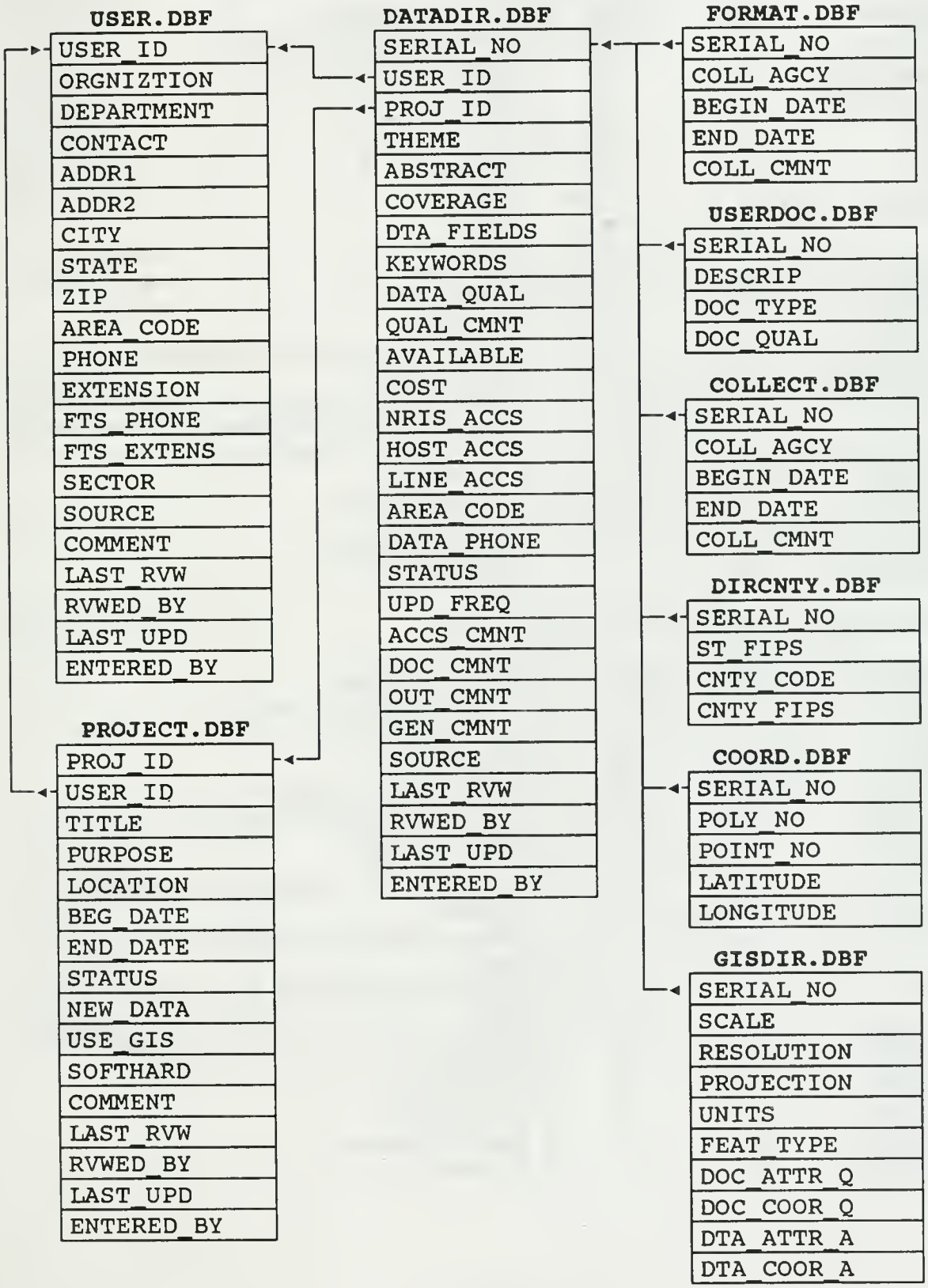
IV Customizing the Data Directory

The Data Directory can be customized to use different keys for the Help key and Exit key or to use different screen colors. To change the current configuration select the System Configuration menu item. See Appendix H for more information on the System Configuration program.

If you have DOS 3.3 or greater, we recommend you alter your AUTOEXEC.BAT file to include the SET CLIPPER=F35 line, alter your CONFIG.SYS file to have the FILES = 35 line, copy ED*.AO to ED*.EDT, and copy RP*.AO to RP.RPT for faster operation of the Data Sources programs. See Appendix G for more information on the Program Definition Files.

APPENDIX B

Database Relationships & Structures



Database Structures

User Database Structure - USER.DBF

Field Name	Type	Width	Dec	Field Description
USER_ID	N	5	0	Unique identification number
ORGNIZTION	C	38	0	Name of the organization
DEPARTMENT	C	38	0	Department name
CONTACT	C	38	0	Contact name
ADDR1	C	38	0	Address line 1
ADDR2	C	38	0	Address line 2
CITY	C	24	0	City
STATE	C	2	0	State
ZIP	C	10	0	Zip Code
AREA_CODE	C	3	0	Area code
PHONE	C	8	0	Phone number
EXTENSION	C	4	0	Extension
FTS_PHONE	C	8	0	Federal Telephone Service phone number
FTS_EXTENS	C	4	0	FTS extension
SECTOR	C	1	0	Sector code (F = Federal, S = State, P = Private)
SOURCE	C	1	0	Source code (G = GIS Survey, W = Water Survey, N = NRIS, U = User Update)
COMMENT	M	10	0	Comments
LAST_RVW	D	8	0	Last review date
RVWED_BY	C	15	0	Reviewed by
LAST_UPD	D	8	0	Date of last update
ENTERED_BY	C	15	0	Entered by

Project Database Structure - PROJECT.DBF

Field Name	Type	Width	Dec	Field Description
PROJ_ID	N	5	0	Unique identification number
USER_ID	N	5	0	User ID number
TITLE	C	75	0	Project title
PURPOSE	M	10	0	Objective/purpose of project
LOCATION	M	10	0	Description of the project study area
BEG_DATE	D	8	0	Project start date
END_DATE	D	8	0	Project end date
STATUS	C	1	0	Project status (C = Complete, O = Ongoing, P = Planned)
NEW_DATA	L	1	0	Was new data generated? (T or Y = true, F or N = false)
USE_GIS	L	1	0	Does the project use GIS? (T or Y = Yes, F or N = false)
SOFTHARD	M	10	0	Software and hardware used in the project
COMMENT	M	10	0	Comments
LAST_RVW	D	8	0	Last review date
RVWED_BY	C	15	0	Reviewed by
LAST_UPD	D	8	0	Date of last update
ENTERED_BY	C	15	0	Entered by

Primary Data Sources Database Structure - DATADIR.DBF

Field Name	Type	Width	Dec	Field Description
SERIAL_NO	N	5	0	Unique serial number
USER_ID	N	5	0	User ID number
PROJ_ID	N	5	0	Project ID number
THEME	C	50	0	Theme
ABSTRACT	M	10	0	Abstract
COVERAGE	M	10	0	Description of the geographic coverage
DTA_FIELDS	M	10	0	List of data fields
KEYWORDS	M	10	0	List of keywords
DATA_QUAL	C	1	0	Data quality code (E = Excellent, G = Good, F = Fair, P = Poor, U = Unknown, V = Varies)
QUAL_CMNT	M	10	0	Data quality comments
AVAILABLE	C	2	0	Availability code (CO = Confidential, PR = Private, PU = Public, NA = Not Available, UN = Unknown, VA = Varies)
COST	C	50	0	Description of the cost
NRIS_ACCS	C	1	0	Access code to the data through NRIS (F = Full Access, L = Limited Access, N = No Access, U = Unknown, V = Varies)
HOST_ACCS	C	1	0	Access code to the data through the host agency (F = Full Access, L = Limited Access, N = No Access, U = Unknown, V = Varies)
LINE_ACCS	C	1	0	Access code to data on-line (F = Full Access, L = Limited Access, N = No Access, U = Unknown, V = Varies)
AREA_CODE	C	3	0	Area code for on-line access
DATA_PHONE	C	8	0	Phone number for on-line access
STATUS	C	1	0	Status Code (C = Complete, D = Under Development, I = Partially Done, P = Planned, U = Unknown, V = Varies)
UPD_FREQ	C	1	0	Update frequency code (A = Annual, F = Frequent, N = Not updated, S = Semi-annual, U = Unknown, V = Varies, X = Sporadic)
ACCS_CMNT	M	10	0	Comments on access
DOC_CMNT	M	10	0	Documentation comments
OUT_CMNT	M	10	0	Output format comments
GEN_CMNT	M	10	0	General comments
SOURCE	C	1	0	Source code (G = GIS Survey, W = Water Survey, N = NRIS, U = User Update)
LAST_RVW	D	8	0	Last review date
RVWED_BY	C	15	0	Reviewed by
LAST_UPD	D	8	0	Date of last update
ENTERED_BY	C	15	0	Entered by

Data Sources Format Database Structure - FORMAT.DBF

This related database includes format type, media and presence of hardcopy and digital versions of each format that a data source occurs in.

Field Name	Type	Width	Dec	Field Description
SERIAL_NO	N	5	0	Data Source serial number
FMT_TYPE	C	1	0	Format type code (D = Tabular database, I = Image, M = map, T = text, U = Unknown)
MEDIA	C	75	0	Media and hardware description
HARDCOPY	L	1	0	Is the data available in hardcopy? (T or Y = true, F or N = false)
DIGITAL	L	1	0	Is the data available in digital format (T or Y = true, F or N = false)

Data Sources User Documentation Database Structure - USERDOC.DBF

This related database contains description, type and quality of associated user documentation for a data source.

Field Name	Type	Width	Dec	Field Description
SERIAL_NO	N	5	0	Data Source serial number
DESCRIP	C	30	0	Description
DOC_TYPE	C	1	0	Documentation type code (M = Manual, O = Online, B = Manual and Online, T = Tutorial, U = Unknown, V = Varies)
DOC_QUAL	C	1	0	Documentation quality code (E = Excellent, G = Good, F = Fair, P = Poor, U = Unknown, V = Varies)

Data Sources Collection Database Structure - COLLECT.DBF

This related database contains data collection information for each data source.

Field Name	Type	Width	Dec	Field Description
SERIAL_NO	N	5	0	Data Source serial number
COLL_AGCY	C	50	0	Collection agency
BEGIN_DATE	D	8	0	Begin date
END_DATE	D	8	0	End date
COLL_CMNT	M	10	0	Comments

Data Sources Counties Database Structure - DIRCNTY.DBF

This related database contains FIPS and NRIS codes for counties covered by data sources.

Field Name	Type	Width	Dec	Field Description
SERIAL_NO	N	5	0	Data Source serial number
ST_FIPS	C	2	0	State FIPS code
CNTY_CODE	C	4	0	NRIS county code (the first four characters of the county excluding spaces)
CNTY_FIPS	C	3	0	County FIPS code

Data Sources Coordinates Database Structure - COORD.DBF

This related database contains vertex coordinates for polygons covered by data sources.

Field Name	Type	Width	Dec	Field Description
SERIAL_NO	N	5	0	Data Source serial number
POLY_NO	N	3	0	Polygon number
POINT_NO	N	3	0	Point number
LATITUDE	C	6	0	Latitude of point
LONGITUDE	C	7	0	Longitude of point

Data Sources GIS Database Structure - GISDIR.DBF

This related database contains GIS specific information for those Data Sources requiring it.

Field Name	Type	Width	Dec	Field Description
SERIAL_NO	N	5	0	Data Source serial number
SCALE	C	12	0	Scale
RESOLUTION	C	10	0	Resolution
PROJECTION	C	4	0	Projection code (see list below)
UNITS	C	2	0	Units code (DD = Decimal Degrees, DG = Degrees, FT = Feet, IN = Inches, M = Meters, TR = Township Range Section, U = Unknown, V = Varies)
FEAT_TYPE	C	2	0	Feature type code (see list below)
DOC_ATTR_Q	C	1	0	Attribute documentation quality code (E = Excellent, G = Good, F = Fair, P = Poor, U = Unknown, V = Varies)
DOC_COOR_Q	C	1	0	Coordinate documentation quality code (E = Excellent, G = Good, F = Fair, P = Poor, U = Unknown, V = Varies)
DTA_ATTR_A	C	1	0	Data attributes accuracy code (E = Excellent, G = Good, F = Fair, P = Poor, U = Unknown, V = Varies)
DTA_COOR_A	C	1	0	Data coordinate accuracy code (E = Excellent, G = Good, F = Fair, P = Poor, U = Unknown, V = Varies)

Projection Codes

Code	Definition
AL	Albers Conic Equal-Area
AGC	Anaconda Geographic Coordinate
AZ	Azimuthal Equidistant
EQC	Equirectangular Plate Carree
PER	General Vertical Near-Side Perspective
GLL	Geographic Latitude/Longitude
GN	Gnomonic (Polar)
LAA	Lambert Azimuthal Equal-Area
LAC	Lambert Conformal Conic
MILL	Miller Cylindrical
OR	Orthographic
PO	Polar Stereographic
POLY	Polyconic
SIN	Sinusoidal (Sansom-Flamsteed)
MERC	Standard Mercator
S2	State Plane - Central Zone
S1	State Plane - North Zone
S3	State Plane - South Zone
S83	State Plane - Single Zone, 1983
SU	State Plane - Unknown Zone
STER	Stereographic (Polar)
TRAN	Transverse Mercator
U11	UTM Zone 11
U12	UTM Zone 12
U13	UTM Zone 13
UTM	UTM Zone Unknown
GR	Van Der Grinten I
UNK	Unknown
VAR	Various

Feature Type Codes

Code	Definition
AR	Arc
GR	Grid
LA	Label
NE	Network
PT	Point
PA	Point and Arc
PO	Polygon
AP	Arc & Polygon
PP	Point & Polygon
P3	Point, Arc & Polygon
VA	Varies
UN	Unknown

APPENDIX C

Files

The following files are on the system utilities installation diskette:

SYSTEM.EXE	self-extracting system configuration utility
AUTOMENU.EXE	self-extracting menu programs and documentation
README.BAT	batch file to display UTILITY.DOC
UTILITY.DOC	introduction to the system utilities
SINSTALL.BAT	after copying the diskette(s), run this to install the system utilities

After installing the utilities the following files will be in your directory:

README.BAT	batch file to display UTILITY.DOC
UTILITY.DOC	introduction to the system utilities

From SYSTEM.EXE:

EDSYS.EXE	system configuration utility
EDSYS.HLP	part of on-line help for EDSYS
EDSYS.DBT	remainder of the on-line help for EDSYS
EDUSKEYS.DBF	available EDIT and USER keys

From AUTOMENU.EXE:

AUTO.BAT	batch file that starts AUTOMENU
AUTOMENU.COM	menu program
AUTOCUST.COM	menu customization utility
AUTOMAKE.EXE	menu-building facility
PRINTDOC.BAT	batch file to print AUTOMENU.DOC
AUTOMENU.DOC	documentation for AUTOMENU
READ.ME	special information for AUTOMENU
LICENSE.DOC	AUTOMENU license agreement
(C)1988.DOC	AUTOMENU copyright notice
SW.COM	"SWap Monitor" utility program
SW.DOC	documentation for SW.COM

The following files are on the Data Directory Diskette(s):

EDEXE1.EXE and **EDEXE2.EXE** or	
EDEXE.EXE	self-extracting Data Directory edit/entry programs and files
RPEXE1.EXE and **RPEXE2.EXE** or	
RPEXE.EXE	self-extracting Data Directory report programs and files
DATA.EXE	self-extracting Data Directory database files
DATADIR.DOC	introduction to the Data Directory
README.BAT	batch file to display DATADIR.DOC
INSTALL.BAT	after copying the diskette(s), run this to install the Data Directory
DATADIR.MDF	Data Directory Menu Definition File for AUTOMENU
DATADIR.BAT	loads AUTOMENU for the Data Directory

After running install the following files will be in your directory:

DATADIR.DOC	introduction to the Data Directory
README.BAT	batch file to display DATADIR.DOC
DATADIR.MDF	Data Directory Menu Definition File for AUTOMENU
DATADIR.BAT	loads AUTOMENU for the Data Directory

From EDEXE.EXE

EDDIR.EXE	Data Sources Maintenance Utility program
EDDIR.EPT	Data Sources Maintenance Utility edit definition file
EDDIR.20	edit definition file for computers not using DOS 3.30 (the same as EDDIR.EDT)
EDDIR.AO	edit definition file for computers using DOS 3.30 or greater
EDDIRLOC.EXE	Data Sources Locations Maintenance Utility program
EDDIRLOC.EPT	Data Sources Location Maintenance Utility edit definition file
EDDIRLOC.20	edit definition file for computers not using DOS 3.30 (the same as EDDIRLOC.EDT)
EDDIRLOC.AO	edit definition file for computers using DOS 3.30 or greater
EDUSER.EXE	Users Maintenance Utility program
EDUSER.EPT	Users Maintenance Utility edit definition file
EDUSER.20	edit definition file for computers not using DOS 3.30 (the same as EDUSER.EDT)
EDUSER.AO	edit definition file for computers using DOS 3.30 or greater
EDPROJ.EXE	Projects Maintenance Utility program
EDPROJ.EPT	Projects Maintenance Utility edit definition file
EDPROJ.20	edit definition file for computers not using DOS 3.30 (the same as EDPROJ.EDT)
EDPROJ.AO	edit definition file for computers using DOS 3.30 or greater

From RPEXE.EXE

RPUSER.EXE	Users Report program
RPUSER.RPT	Users Report definition file
RPPROJ.EXE	Projects Report program
RPPROJ.RPT	Projects Report definition file
RPDIR.EXE	Data Sources Report program
RPDIR.RPT	Data Sources Report definition file
RPDIR.20	Data Sources Report definition file for systems not using DOS 3.30 (the same as RPDIR.RPT)
RPDIR.A0	Data Sources Report definition file for computers with DOS 3.30 or greater

From DATA.EXE

USER.DBF & USER.DBT	Users database
PROJECT.DBF & PROJECT.DBT	Projects database
DATADIR.DBF & DATADIR.DBT	Data Sources database
COLLECT.DBF & COLLECT.DBT	data collection database for Data Sources
FORMAT.DBF	data formats database for Data Sources
USERDOC.DBF	user documentation database for Data Sources
DIRCNTY.DBF	counties for Data Sources
COORD.DBF	coordinates of polygon vertices for Data Sources
GISDIR.DBF	GIS specific data database for Data Sources

USERMISC.DBF	Miscellaneous look-up tables for the Users Report
PROJMISC.DBF	Miscellaneous look-up tables for the Projects Report
DIRMISC.DBF	Miscellaneous look-up tables for the Data Sources Report

The following indices are created by the Data Directory report programs:

US_ID.NTX	User ID number index for USER.DBF
US_ORG.NTX	User organization index for USER.DBF
US_CONT.NTX	User contact index for USER.DBF
PR_ID.NTX	Project ID number index for PROJECT.DBF
PR_TITLE.NTX	Project title index for PROJECT.DBF
PR_ORG.NTX	Project organization index for PROJECT.DBF
DD_SER.NTX	Data Source serial number index for DATADIR.DBF
DD_ORG.NTX	Data Source organization index for DATADIR.DBF
FMT_NO.NTX	Serial number index for FORMAT.DBF
COLL_NO.NTX	Serial number index for COLLECT.DBF
UDOC_NO.NTX	Serial number index for USERDOC.DBF
DIRCY_NO.NTX	Serial number index for DIRCNTY.DBF
COORD_NO.NTX	Serial number index for COORD.DBF
GISD_NO.NTX	Serial number index for GISDIR.DBF
USERMISC.NTX	Category and abbreviation index for USERMISC.DBF
PROJMISC.NTX	Category and abbreviation index for PROJMISC.DBF
DIRMISC.NTX	Category and abbreviation index for DIRMISC.DBF
UNIQ_ORG.NTX	Unique organization name index for USER.DBF

APPENDIX D

Runtime Errors

Some errors can occur when you run the Data Directory programs. Most of the time these errors are minor and can be easily corrected. Common errors and possible solutions are discussed below.

I. Out of Memory

The Data Directory programs are memory hogs. 640K of memory is required and at least 512K of that memory must be available before running the program. If you get an out of memory error the only option is to provide more memory. Try unloading some or all of your memory resident (TSR) programs, (programs that are loaded and stay resident in memory, for example SIDEKICK or TORNADO) or modifying your AUTOEXEC.BAT file so they are not loaded automatically.

Note: There is public domain software called "CONFIG.EXE" which can be used to create more than one easily loaded operating environment.

Note: The presence of memory resident programs may also be the reason for slow performance. Again try unloading some or all of your memory resident programs.

II. File Opening Errors

If any of the following messages appear at the bottom of the screen, one of two problems has occurred.

1) The file was not found, or;
2) There are too many files open.

PROC: OPEN_DATAB Line ???, open error xxxxxxxxxxxxx Retry? (y/n)
PROC: RE_OPEN_IN Line ???, open error xxxxxxxxxxxxx Retry? (y/n)

If any of the following messages appear at the bottom of the screen, one of three problems has occurred.

1) The file was not found,
2) There are too many files open, or;
3) The index does not match the database.

Unable to create index xxxxxxx.NTX
Directory: xxxxxxxxxxxxxxxxxxxxx Press Enter.

Index file error for xxxxxxx.DBF : field name(s).
Directory: xxxxxxxxxxxxxxxxxxxxx Press Enter.

If the following message appears at the bottom of the screen a file was not found.

xxxxxxxx.DBF was not found.
Directory: xxxxxxxxxxxxxxxxxxxxx Press Enter.

SOLUTIONS:

If a file was not found the corresponding program definition file probably has an error. See Appendix G for more information on program definition files.

If a there are too many files open there are several possible solutions.

1) You are using a version of MS-DOS prior to 3.3. Earlier versions allow a maximum of 20 simultaneous open files per process. Some Data Directory programs use more than 20 files.

   You can either upgrade to MS-DOS 3.3 or copy the files ED*.20 to ED*.EDT and RP*.20 to RP*.RPT. These files cause the Data Directory programs to open no more than 20 files at a time. Because the Data Directory programs must open additional files from time to time performance will decrease.

2) The FILES statement in your CONFIG.SYS is set too low or does not exist. We recommend that the FILES statement be set at FILES=35 or greater. An odd number is recommended.

3) Another program such as a memory resident or Windows application and the Data Directory program are using several files at the same time. You can increase the FILES statement in the CONFIG.SYS file.

4) The statement SET CLIPPER=F35 is not in the environment. This software was written in Clipper, a compiler for the dBASE language. In order to run a Data Directory program with more than 20 file open the SET statement must either be included in the AUTOEXEC.BAT file, in a batch file that is used to run the Data Directory program, in the AUTOMENU MDF file, or entered at the DOS prompt before running the Data Directory program.

5) The corresponding program definition file is in error. See Appendix G for more information on program definition files.

If an index does not match a database the program definition file probably has an error. See Appendix G. As delivered the index expression fields and filenames are all correct.

III. Any Other Error

Any other error will probably require technical assistance. Press the Print Screen key to print the screen on the printer and call or write:

Jim Senkler
Natural Resource Information System
Montana State Library
1515 E. Sixth Ave.
Helena, MT 59620

(406) 444-5354

APPENDIX E

Find a User

Whenever the cursor is positioned in a User ID field in the Data Sources Maintenance Utility or the Projects Maintenance Utility, you can call up a special window to help you find a User. Press **Ctrl-Find** (Ctrl-F5), and the window in Figure E.1 will appear at the bottom of the screen.

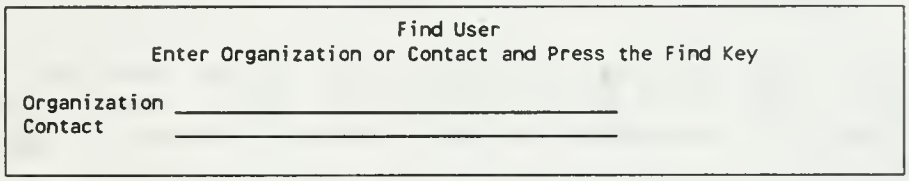


Figure E.1. Find User Window

Enter either the organization or the contact. (Enter as much of the name as needed to find the User for which you are looking.) Press the Find Record key (F5) and the first User greater than or equal to the information you entered will be found. Use the Next Record key (F6) or Previous Record key (F7) until you find the User. At any time you can enter a new organization or contact and press the Find Record key. When you have found the correct User, press the Exit key (Escape), and the User ID, Organization and Contact fields in the Main Window will be filled.

For example, if you are looking for Greg Ames at the Dept. Natural Resources and Conservation, you could do it one of two ways:

1. Enter **Dept. Natural** in the **Organization** field and press the **Find Record** (F5) key. The window in Figure E.2 will appear.

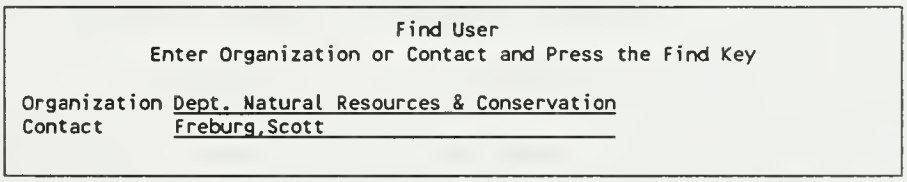

Find User
Enter Organization or Contact and Press the Find Key
Organization Dept. Natural Resources & Conservation
Contact Freburg,Scott

Figure E.2. Find User Window (find organization)

Since Mr. Freburg is the first name listed in the database for this organization, his name will appear. Next, press the **Next Record** key (F6) until Greg Ames appears in the **Contact** field. Press the **Exit** key (Escape) and the correct data will appear automatically in the User ID, Organization and Contact fields in the Main Screen.

2. Move the cursor to the **Contact** field. Enter **Ames**, and press the **Find Record** key (F5). The window in Figure E.3 will appear.

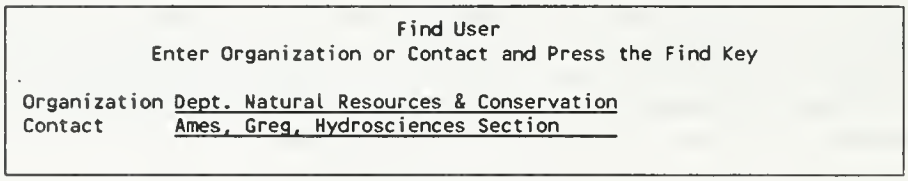

Find User
Enter Organization or Contact and Press the Find Key
Organization Dept. Natural Resources & Conservation
Contact Ames, Greg, Hydrosciences Section

Figure E.3. Find User Window (find contact)

Since this is the User you want, press the **Exit** key (Escape) and the correct data will appear automatically in the User ID, Organization and Contact fields in the Main Screen.

NOTE: For some records, the user's name has not been entered with last name first. Therefore it may be necessary to try the User's first name first name along with the last name in the **Contact** field.

If you want to enter a different **Contact**, press the **Clear Record** key (F2) and re-enter the name.

APPENDIX F

Find a Project

Whenever the cursor is positioned in a Project ID field in the Data Sources Maintenance Utility, or the Data Sources Location Maintenance Utility you can call up a special window to help you find a project. Press **Ctrl-Find** (Ctrl-F5), and the window in Figure F.1 will appear at the bottom of the screen.

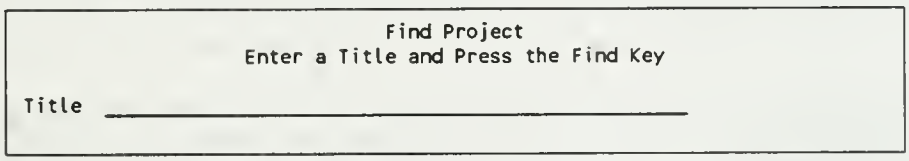


Figure F.1. Find Project Window

Enter the title of the project. (Enter as much of the project title as needed to find the project for which you are looking.) Press the Find Record key (F5) and the first project greater than or equal to the information you entered will be found. Use the Next Record key (F6) or Previous Record key (F7) until you find the project you are seeking. At any time you can enter a new project title and press the Find Record key. When you have found the correct project, press the Exit key (Escape), and the Project ID and Title fields in the Main Window will be filled.

For example, if you are looking for the Columbia River Basin System Operating Review - EIS, enter **Columbia River Basin** in the **Title** field and press the **Find Record** (F5) key. The window in Figure F.2 will appear.

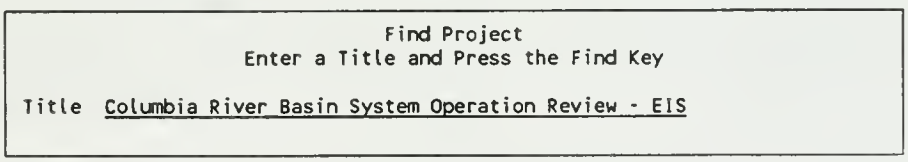


Figure F.2. Find Project Window

Since this is the project you want, press the **Exit** key (Escape) and the correct data will appear automatically in the Project ID and Title fields in the Main Screen.

APPENDIX G

Program Definition Files

I Introduction

Each Data Directory program has a corresponding program definition file to tell it where to find the files it needs and how many files it can have open at one time. It also defines the windows and fields to be entered by the Data Directory edit/entry programs and the fields to be reported by the Data Directory report programs. The following is a list of programs and their corresponding program definition file:

Data Sources Maintenance Utility	EDDIR.EDT
Data Sources Location Maintenance Utility	EDDIRLOC.EDT
Users Maintenance Utility	EDUSER.EDT
Projects Maintenance Utility	EDPROJ.EDT
Data Sources Report Utility	RPDIR.RPT
Users Report Utility	RPUSER.RPT
Projects Report Utility	RPPROJ.RPT

Each definition file must be in the same directory from which you load the program.

The files are technical in nature and should be only be modified if you are sure you know what you are doing.

Three versions of most program definition files are provided. They are distinguished by how many files they allow to be open at one time. Those files having the .AO extension allow all of the files needed by the program to be open at the same time. They allow for faster operation of the program. It requires your computer to be using DOS 3.30 or greater; the environmental statement SET CLIPPER=F35 to be set or included in the AUTOEXEC.BAT file; and the FILES statement in CONFIG.SYS be set to 35 or higher. (See your DOS manual under AUTOEXEC.BAT, ENVIRONMENT, CONFIG.SYS, and FILES for more information.)

Those versions having the .20 extension allow a maximum of 15 files to be open at one time and will work with any DOS version 2.00 or greater. It requires no changes to your AUTOEXEC.BAT or CONFIG.SYS files.

The default versions, those ending in .EDT or .RPT, are identical with those ending in .20.

If you have DOS 3.30 or greater, we recommend you alter your AUTOEXEC.BAT to include the SET CLIPPER=F35 line, alter your CONFIG.SYS file to have the FILES = 35 line included, and copy ED*.AO to ED*.EDT and RP*.AO to RP*.RPT for faster operation of the programs.

II Program Definition File Structure

All lines in a Program Definition File have a similar structure. They begin with a one to four character line identifier delimited with a semi-colon and one or more fields delimited with semi-colons. For example:

I;US_ID;STR(USER_ID,5);Y

is an Index Definition Line with three fields.

Note: All Data Directory programs are written in Clipper, a dBASE language compiler. Clipper provides an enhanced set of dBASE III+ commands and functions and faster index files, compatible with dBASE III+ databases. These index files are distinguished by their .NTX file extension.

In addition, text indices, developed by Index Applications, are used in these programs. These indexs have .IA as their file extension.

Expressions used in the Program Definition Files can be standard dBASE III+ expressions or can make use of the enhancements provided by Clipper.

Variable Definition Line - V

Purpose:

Declare and initialize program variables.

Syntax:

V;Variable;Value

Fields:

Variable - the name of the variable. This field must contain only alphabetic or numeric characters or the underbar (_).

Value - the value to be assigned to the variable. If the field begins with an **&**, the remainder of the field is evaluated as an expression and assigned to the variable; otherwise the value is assigned as a character string.

Description:

Variable Definition Lines are used to declare and initialize a variable which can be used in the program. The two most common uses are to define the directory where files can be found and to specify file names and index numbers to be used internally by programs. See **Variables as Directories** and **Variables as Internal Variables.**

Examples:

V;ID_IDX;US_ID
assigns the character string **US_ID** to the variable **ID_IDX**.

V;WND_MAIN;&VAL("1")
assigns the numeric value **1** to the variable **WND_MAIN**.

Database Count Definition Line - DC

Purpose:

Define how many databases and indices will be used.

Syntax:

DC;DBF Count;Index Count;DBFs Open Count;Indices Open Count;Foreign Keys Count

Fields:

DBF Count - the maximum number of databases used by this program.

Index Count - the maximum number of database indices used by this program.

DBFs Open Count - the maximum number of databases that can be open simultaneously by this program.

Indices Open Count - the maximum number of database indices that can be open simultaneously by this program.

Foreign Key Count - the maximum number of foreign keys defined. See **Foreign Key Definition Lines**.

Note: DOS versions 3.2 and less only allow a maximum of 15 files to be open at one time. The **DBFs Open and Indices Open** counts fields are used in correspondence with the **Keep Open** fields in the **Database Definition** and **Index Definition** lines described below.

Description:

The **Database Count Definition Line** is used internally by the program to set aside space for defining the databases to opened later. Only one **Database Count Definition Line** is needed in a Program Definition File. The **Database Count Definition Line** must appear before any **Database Definition Lines**.

Examples:

DC;9;16;3;5;9

Database Definition Line - DB

Purpose:
To define a database used by the program.

Syntax:
DB;Name;Directory;Keep Open;Description

Fields:
Name - the name of the database.

Directory - the directory which contains the database. If the directory begins with **&**, this field is a variable in which the actual directory is stored. See **Variables as Directories.**

Keep Open - If this field is **Y**, the database is always open, otherwise it is only opened when needed by the program.

Description - the description of the database.

Description:
One database is opened for each **Database Definition Line**. If the **Keep Open** field is **N**, the database is closed after it has been initially opened until it is re-opened by the program.

Examples:
DB;DATADIR;&APP_DTA_DIR;N;Data Sources

DATADIR.DBF will be opened in the directory defined by the variable APP_DTA_DIR. After it is initially opened it will be closed until needed by the program.

Primary Key Definition Line - P

Purpose:
To describe the primary key for a database.

Syntax:
P;Expression;Order;Description

Fields:
Expression - a valid Clipper index expression that uniquely identifies a record.

Order - The number of the index that is used as the primary key.

Description - the description of the key.

Description:
A primary key is the expression that uniquely identifies a record. For example, the primary key for the Data Sources database is the Serial No. i.e. each record in the Data Sources database has a unique serial no.

Examples:
P;STR(SERIAL_NO,5);1;Data Sources Serial No.

STR(SERIAL_NO,5) is the primary key for the preceding database. Its index is the first index listed.

Clipper Index Definition Line - I

Purpose:
To describe an dBASE III/Clipper index.

Syntax:
I;Name;Expression;Keep Open;Description

Fields:
Name - the name of the index.

Expression - a valid dBASE III+/Clipper index expression.

Keep Open - If this field is **Y**, the index is always open, when the preceding database is open; otherwise it is only opened when needed by the program.

Description - the description of the index.

Description:
One index for the preceding database is opened for each **Clipper Index Definition Line.** If the **Keep Open** field is **N**, the index is closed and reopened when needed by the program.

Examples:
I;DD_SER;STR(SERIAL_NO,5);Y;Data Sources Serial No.

DD_SER.NTX will be opened in the directory defined in the preceding database. It will stay open as long as the preceding database is open.

Text Index Definition Line - T

Purpose:
To describe an Index Applications' text index.

Syntax:
T;Name;Expression;Keep Open;Description

Fields:

Name - the name of the index.

Expression - a dBASE III+/Clipper character expression which can combine one or more character or memo fields.

Keep Open - If this field is **Y**, the index is always open, when the preceding database is open; otherwise it is only opened when needed by the program.

Description - the description of the index.

Description:

One text index for the preceding database is opened for each **Text Index Definition Line.** If the **Keep Open** field is **N**, the index is closed and reopened when needed by the program.

A text index is not a standard dBASE index. It is used to search fields for text anywhere in the fields. For example, if the abstract field for the Data Sources was included in a text index, you could search for any string of characters you wanted anywhere in the abstract field.

Examples:

```
I;PR_PUTX;TRIM(TITLE) + " " + TRIM(PURPOSE) + " " +
TRIM(COMMENT);Y;Title & Purpose Text
```

PR_PUTX.IA will be opened in the directory defined in the preceding database. It will stay open as long as the preceding database is open.

Look-up Table Count Definition Line - LC

Purpose:

Define how many databases and indices will be used.

Syntax:

```
LC;Table Count;Index Count;Tables Open Count;Indices Open
Count
```

Fields:

The field descriptions are the same as for the **Database Count Definition Line.**

Description:

The **Look-up Table Count Definition Line** is used internally by the program to set aside space for defining the look-up tables to opened later. Only one **Look-up Table Count Definition Line** is needed in a Program Definition File. The **Look-up Table Count Definition Line** must appear before any **Look-up Table Definition Lines.**

Examples:
LC;2;2;2;2

Look-up Table Definition Line - LT

Purpose:
To define a look-up table used by the program.

Syntax:
LT;Name;Directory;Keep Open;Description

Fields:
Name - the name of the look-up table.

Directory - the directory which contains the look-up table. If the directory begins with **&**, this field is a variable in which the actual directory is stored. See **Variables as Directories.**

Keep Open - If this field is **Y**, the look-up table is always open, otherwise it is only opened when needed by the program.

Description - the description of the look-up table.

Description:
One look-up table is opened for each **Look-up Table Definition Line.** If the **Keep Open** field is **N**, the look-up table is closed after it has been initially opened until it is re-opened by the program. Typically the look-up tables are opened, read, and closed by the program during program initialization and are never used again.

Examples:
LT;PROJMISC;&APP_DTA_DIR;Y;Miscellaneous Project Database Codes

PROJMISC.DBF will be opened in the directory defined by the variable APP_DTA_DIR.

Help Database Count Definition Line - HC

Purpose:
Define how many help databases and indices will be used.

Syntax:
HC;Help Database Count;Index Count;Help Databases Open Count;Indices Open Count

Fields:
The field descriptions are the same as for the **Database Count Definition Line.**

Description:
The **Help Database Count Definition Line** is used internally by the program to set aside space for defining the help databases to opened later. Only one **Help Database Count Definition Line** is needed in a Program Definition File. The **Help Database Count Definition Line** must appear before any **Help Database Definition Lines.**

Examples:
HC;1;1;1;1

Help Database Definition Line - HP

Purpose:
To define a help database used by the program.

Syntax:
HP;Name;Directory;Keep Open;Description

Fields:
Name - the name of the help database.

Directory - the directory which contains the help database. If the directory begins with **&**, this field is a variable in which the actual directory is stored. See **Variables as Directories.**

Keep Open - If this field is **Y**, the help database is always open, otherwise it is only opened when needed by the program.

Description - the description of the help database.

Description:
One help database is opened for each **Help Database Definition Line.** If the **Keep Open** field is **N**, the help database is closed after it has been initially opened until it is re-opened by the program.

Examples:
HP;EDPROJ.HLP;&APP_DTA_DIR;N;Edit Project Help Database

EDPROJ.HLP will be opened in the directory defined by the variable APP_DTA_DIR. It will be closed after it has been initially opened until needed by the program.

The next three definition lines are specific to Edit/Entry programs.

Edit Definition Line - ED

Purpose:
To define the number of edit windows.

Syntax:
ED;Windows;Insert Row;Insert Column

Fields:
Windows - the number of edit windows.

Insert Row - not used.

Insert Column - not used.

Description:
The **Edit Definition Line** is used internally to set aside space for the window descriptions.

Examples:
ED;2;24,72

Window Definition Line - WN

Purpose:
To define an edit window.

Syntax:
WN;Name;Fields;Mode;Top;Left;Bottom;Right;Draw Box;Box Type; Display Date;Message Row;Title 1;Title 2;Title 3;Title 4;Title 5

Fields:
Name - the name of the window.

Fields - the number of fields in the window.

Mode - **A** => active window, **I** => inactive window.

Top, Left, Bottom, Right - the screen coordinates for the window.

Draw Box - If **Draw Box** is **Y** a box is displayed.

Box Type - If **Draw Box** is **Y**, **S** will display a single line box, **D** will display a double line box.

Display Date - If **Display Date** is **Y**, the current date will be displayed in the upper right hand corner of the window.

Message Row - the row on which error and other messages will be displayed.

Title 1, Title 2, Title 3, Title 4, Title 5 - up to five titles can be displayed in the window starting in the **Top** row. **Title 1** will be centered with a space on each end in the box if **Draw Box** is **Y**. The other titles will be centered in the next rows.

Description:
A **Window Definition Line** describes the visual characteristics of an edit window. Immediately following the line are the **Edit Field Definition Lines**.

Examples:
WN;Main Entry Window;23;A;0;0;24;79;Y;D;Y;24;Montana State Library; Natural Resource Information System;Maintain Projects

This example will draw a double line box around the entire screen and display three titles and the date.

Edit Field Definition Line - F

Purpose:
To define an edit field.

Syntax:
F;Database;Name;Type;Mode;Description;Prompt;Prompt Row;Prompt Column;Read Row;Read Column;Picture;Pre-Edit Procedure;Post-Edit Procedure;Index

Fields:
Database - the database in which the field appears. For some edit fields this field will be **M**; an internal memory field.

Name - the name of the field.

Type - the type and length of the field. Valid types are: **C** - character, **N** - numeric, **L** - logical, **D** - date, **M** - memo, **I** - inkey.

Mode - the mode of the field. Valid modes are: **A** - active, **I** - inactive, **D** - display only, **P** - prompt, **D** - description, **B** - box.

Description - description of the field. It is used in any messages about the field.

Prompt - the field prompt. If the field does not require a prompt the field can be left empty.

Prompt Row, Prompt Column - the row and column where the prompt will be displayed. If the **Mode** is a box these field become the top and left coordinates for the box.

Read Row, Read Column - the row and column where the field will be displayed. If the **Mode** is a box these fields become the bottom and right coordinates for the box.

Picture - the picture clause for the field. If it is not entered, the program will provide a default picture.

Pre-Edit Procedure - an optional procedure called by the program before the field is entered.

Post-Edit Procedure - an optional procedure called by the program after the field is entered. The procedure can be used to check the field for a valid entry.

Index - If the field is indexed, the name of the index as it appears in the **Name** field of the **Index Definition Line** should be entered here.

Description:
An **Edit Field Definition Line** describes the characteristics of an edit field. One line is entered for each field.

Examples:
F;PROJECT;PROJ_ID;N5;A;Project ID;Project ID;4;2;4;16;99999;
PR_PROJ_ID;PS_PROJ_ID;PR_ID

This example allows editing of the **PROJ_ID** field in the **PROJECT** database. The prompt, **Project ID**, will be displayed at **4,2**. The field is a **numeric** field **5** digits wide and will be displayed at **4,16**. The picture is **99999**. Before the field is entered the procedure **PR_PROJ_ID** is called. After entering the field the procedure **PS_PROJ_ID** will be called. The index for the field is **PR_ID**.

The next four definition lines are specific to Report programs.

Adhoc List Report Count Definition Lines - LIST

Purpose:
To define the number of Adhoc List Report fields.

Syntax:
LIST;Count

Fields:
Count - the number of fields.

Description:
The **Adhoc List Report Count Definition Line** is used internally by the program to set aside space for defining the fields used for the Adhoc List Report. Only one **Adhoc List Report Count Definition Line** is needed in an Report Definition File. The **Adhoc List Report Count Definition Line** must appear before any **Adhoc List Report Field Definition Lines**.

Examples:
LIST;30

Adhoc List Report Field Definition Line - F

Purpose:
To define an Adhoc List Report field.

Syntax:
F;Prompt;Column;Field

Fields:
Prompt - the field prompt. It is also description of the field listed in Adhoc List Report pick list. The prompt is always displayed or printed in column 1.

Column - the column where the field will be displayed or printed.

Field - the field, expression or function which is displayed or printed.

Description:
An **Adhoc List Report Field Definition Line** describes the characteristics of an Adhoc List Report field and adds a selection to the Adhoc List Report pick list. One line is entered for each field. In an Adhoc List Report each field selected from the pick list is displayed or printed on its own line or lines.

Examples:
F;Theme;16;THEME

This example adds **Theme** to the Adhoc List Report pick list and if it is selected, it will generate a line with the prompt **Theme**, followed by the THEME field starting in column 16.

Adhoc Column Report Count Definition Lines - COL

Purpose:
To define the number of Adhoc Column Report fields.

Syntax:
COL;Count

Fields:
Count - the number of fields.

Description:
The **Adhoc Column Report Count Definition Line** is used internally by the program to set aside space for defining the fields used for the Adhoc Column Report. Only one **Adhoc Column Report Count Definition Line** is needed in an Report Definition File. The **Adhoc Column Report Count Definition Line** must appear before any **Adhoc Column Report Field Definition Lines.**

Examples:
COL;30

Adhoc Column Report Field Definition Line - F

Purpose:
To define an Adhoc Column Report field.

Syntax:
F;Heading;Width;Database;Field

Fields:
Heading - the column heading. It is also description of the field listed in Adhoc Column Report pick list.

Width - the width of the column in which the field will be displayed or printed. If it is less than the width of the actual field, only the first **width** characters will be displayed or printed.

Database - the database in which the field appears.

Field - the field, expression or function which is displayed or printed.

Description:
An **Adhoc Column Report Field Definition Line** describes the characteristics of an Adhoc Column Report field and adds a selection to the Adhoc Column Report pick list. One line is entered for each field. In an Adhoc Column Report as many fields selected as will fit on one line are displayed or printed.

Examples:
F;Online Phone;14;DATADIR;"(" + AREA_CODE + ") " +
DATA_PHONE

This example adds **Online Phone** to the Adhoc Column Report pick list and if it is selected, it will generate a column fourteen characters wide with the heading **Online Phone**. The entry in the column will be the **AREA_CODE** enclosed in parentheses followed by **DATA_PHONE** from the **DATADIR** database.

III Variables as Directories

When the directory field for a **Database Definition Line** starts with a **&** is treated as a variable. This variable must be defined in one of two ways.

1) If the variable is APP_DTA_DIR, APP_HLP_DIR, SYS_DTA_DIR, or SYS_HLP_DIR, it is one of the four pre-defined directory variables stored in the SYSDIRS.MEM file. These variables are read into the program. To change the values for these variables use the EDSYS program (See Appendix F) or create **Variable Definition Lines** (A **Variable Definition Line** overwrites the value assigned in the SYSDIRS.MEM file).

2) Any other variable must be defined by adding a **Variable Definition Line** to the Program Definition File.

IV Variables as Internal Variables

The Data Directory programs refer to databases by variables defined in .EDT file rather than their exact name. For example, in the two following definitions line taken from EDPROJ.EDT,

```
V;MAIN_DBF;PROJECT
```

the Project Database Maintenance Utility program knows the PROJECT.DBF database as MAIN_DBF. If you wanted to rename the database to PROJECTS.DBF, you would change the line to the following:

```
V;MAIN_DBF;PROJECTS
```

V Modifying a Definition File

A Definition File should be modified only if absolutely necessary. It has been tested and should work as delivered. It is an ASCII (DOS) text file. If you use a word processor like Word Perfect to modify it, you must read the file in as a text file and save it as a text file.

APPENDIX H

Customizing the Data Directory

The Data Directory can be customized using the system configuration utility, EDSYS. EDSYS allows you to modify several features of the Data Directory including:

1) where system and application files are located,
2) which keys are used as the Exit key and Help key,
3) screen colors,
4) edit keys, and
5) user keys.

This program maintains the following five ".MEM" files which contain the current values for each of the features.

SYSDIRS.MEM - System Directories
SYSKEYS.MEM - System Keys
SY_MONO.MEM - System Colors for a monochrome monitor
SY_COLOR.MEM - System Colors for a color monitor
EDITKEYS.MEM - Edit Keys
USERKEYS.MEM - User Keys

The program is loaded by choosing it from a menu or entering EDSYS from the DOS prompt. The program will display the following screen (Figure H.1):

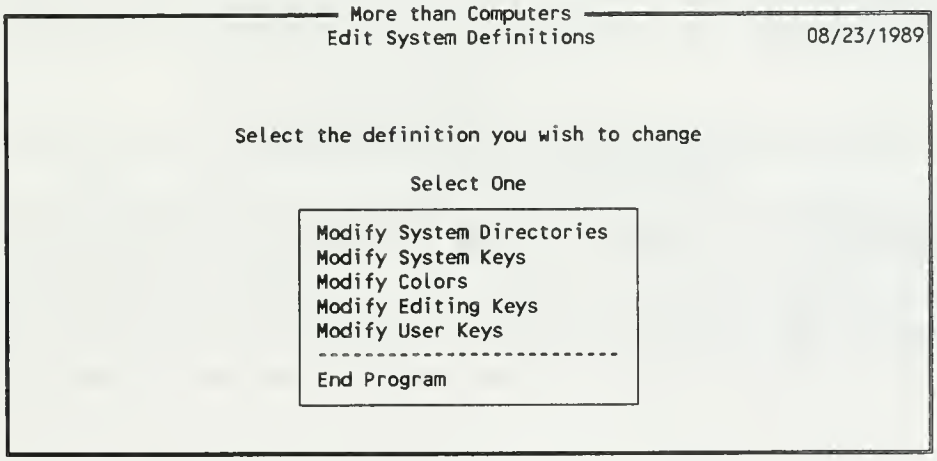


Figure H.1. Opening Screen

SYSTEM DIRECTORIES

To modify the system directories use the arrow keys to highlight the **Modify System Directories** option. When you press Enter a screen similar to the following screen will appear (Figure H.2):

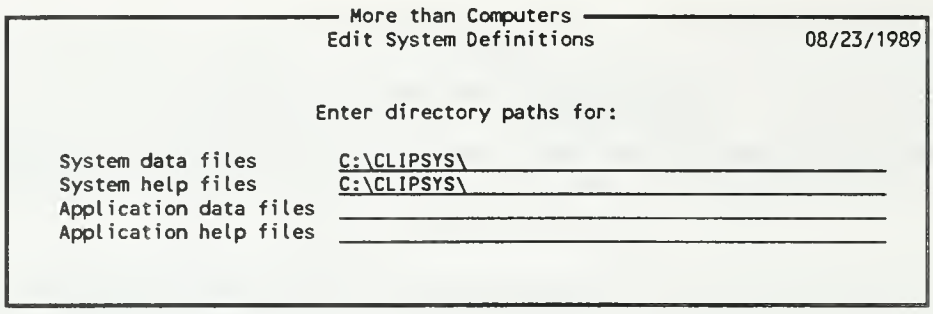


Figure H.2. Enter Directory Paths

System Directory Paths are used to specify where data and help files are located. Five directories are defined:

System data files - the directory where data files used by system utilities can be found.

System help files - the directory where help files used by system utilities (such as EDSYS.HLP, the help file for this program) can be found.

Application data files - the directory where the program's data files can be found.

Application help files - the directory where the program's help files can be found.

Enter the directory paths for the above files. If you need help press the F1 key. When you have entered all of the paths the following menu will appear on the screen (Figure H.3).

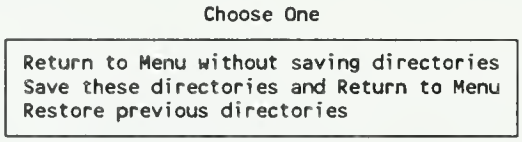

Choose One
Return to Menu without saving directories
Save these directories and Return to Menu
Restore previous directories

Figure H.3. Options after Entering Directory Paths

If you like your modifications save them by choosing the second menu item. If you do not, select either of the other two options. You will return to the opening screen (Figure H.1).

SYSTEM KEYS

To change the system key definitions use the arrow keys to highlight the **Modify System Keys** option. When you press Enter a screen similar to the following screen will appear (Figure H.4).

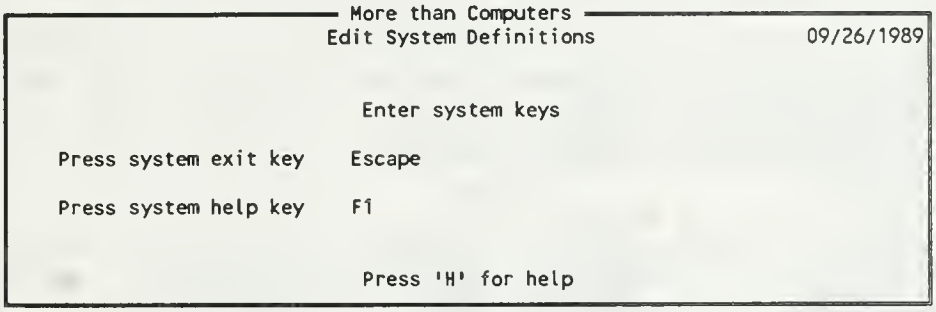


Figure H.4. Enter System Keys

System Keys are the two keys which are used by many programs to exit the current level of the program and to ask for help. You can specify which keys will function as the Exit and Help keys. To do this first press the key you want to be the exit key. Typically it is the Escape key. Next press the key you want to be the help key. Typically it is the F1 key. If you want help press the **H** key.

When you have entered the keys the following menu will appear on the screen (Figure H.5).

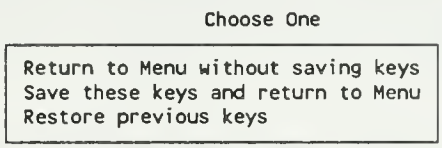


Figure H.5. Options after Entering System Keys

If you like your key definitions save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen (Figure H.1).

SCREEN COLORS

If you want to change the screen colors use the arrow keys to highlight the **Modify Colors** option. When you press Enter a screen similar to the following screen will appear (Figure H.6).

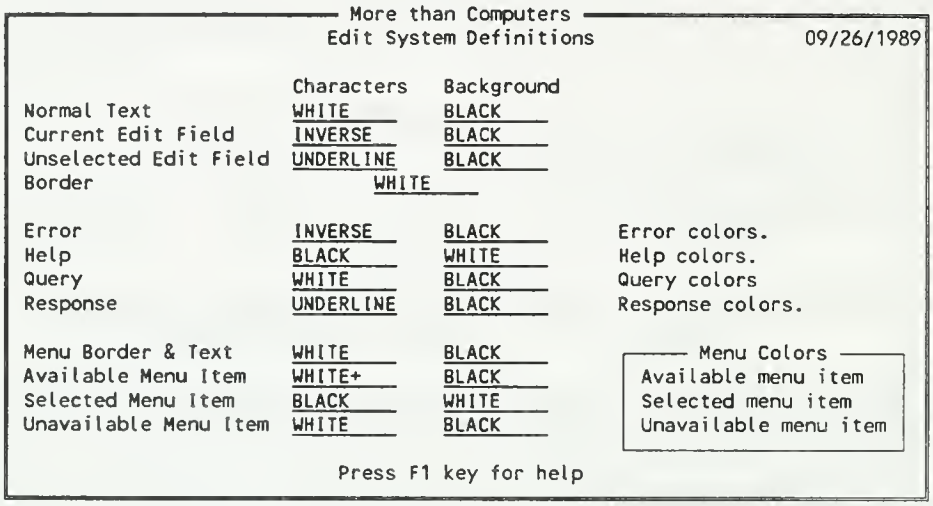


Figure H.6. Enter Screen Colors

System Colors are used for various screen functions. You can enter colors for each item by typing the name into the appropriate field. If you enter an invalid color a pop-up table with the available colors will appear. Highlight the color you want and press enter. You can move from field to field with the up and down arrow keys.

Field Descriptions

Text being displayed, such as prompts and headings, use the Normal Text Foreground color on the Normal Text Background color. A field being entered uses the Current Edit Field Foreground and Background colors. Other fields available for editing use the Unselected Edit Field Foreground and Background colors.

The error Foreground and Background colors are used to display error messages.

Help messages are displayed using the Help Text Foreground color on the Help Text Background color.

The Query and Response colors are the colors used by some requests for input. Parameters entered for reports use these colors. The question or prompt is displayed in the Query colors and the answer is displayed in the Response colors.

The border and heading of a menu use the Menu Border and Text Foreground colors. The menu choices that cannot be selected use the Unavailable Item colors. The menu choices that can be

selected use the Available Menu Item colors. The current menu choice uses the Selected Menu Item colors.

The border color is the color of the area of the screen beyond the useable area of the monitor. For many computers & monitors it is ignored and the Normal Text Background color is used.

For color monitors the available colors are: BLACK, BLUE, GREEN, CYAN, RED, MAGENTA, BROWN, WHITE, GRAY, and YELLOW. Adding a '+' will brighten the color. It will not affect the Background color fields. Adding a '*' to a color will cause blinking.

For monochrome monitors the available colors are: BLACK, WHITE, BLANK, UNDERLINE, and INVERSE. Adding a '+' will intensify the color. It will not affect the Background colors. Adding a '*' to a color will cause blinking.

When you have entered the keys the following menu will appear on the screen (Figure H.7).

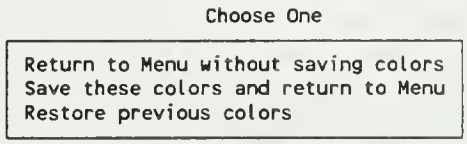


Figure H.7. Options after Entering Screen Colors

If you like the screen colors save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen (Figure H.1).

EDITING KEYS

The Editing keys are not used in the Data Directory report programs. They will be used in data entry programs written to update the databases. The discussion below is provided for your information only.

If you want to change the Editing keys use the arrow keys to highlight the **Modify Editing Keys** option. When you press Enter a screen similar to the following screen will appear (Figure H.8).

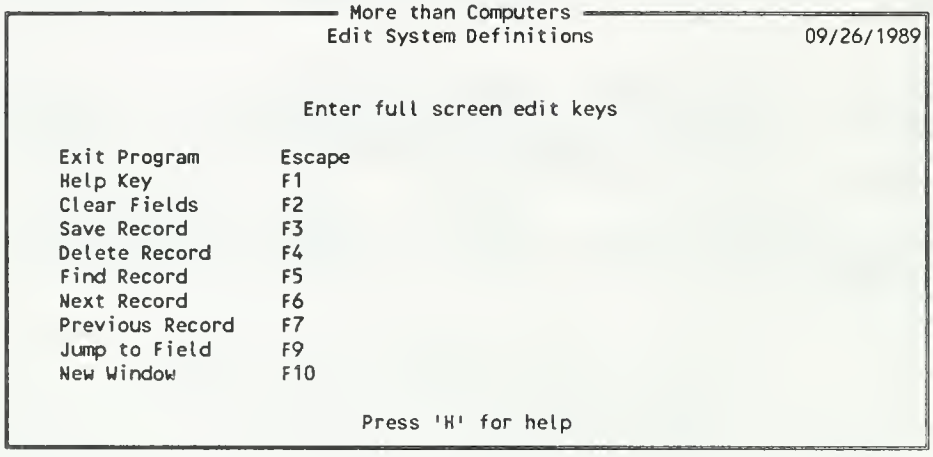


Figure H.8. Enter Editing Keys

System Edit Keys are the keys used by edit programs to do such things as clear the fields on the screen, find records, and save and delete records. The following keys are defined:

Description	Default Value
Edit Exit Key	Escape
Edit Help Key	F1
Edit Clear Fields Key	F2
Edit Save Record Key	F3
Edit Delete Record Key	F4
Edit Find Record Key	F5
Edit Next Record Key	F6
Edit Previous Record Key	F7
Edit Jump to Field Key	F8
Edit New Window Key	F9

Edit Exit Key

The Edit Exit Key is used by most editing programs to end the program or to return to a previous level in the program. Typically it is the Escape Key.

Edit Help Key

The Edit Help key is used by most editing programs to ask for help. Typically it is the F1 key.

Edit Clear Fields Key

The Edit Clear Fields key is used by most editing programs to clear the fields on the screen and position the cursor in the first field. Usually the program is ready to add a new record to the database or to allow the user to find an existing record using the Find, Next, or Previous Record keys. Typically the Clear Fields key is the F2 key.

Edit Save Record Key

The Edit Save Record key is used by most editing programs to save a new record or the changes made to the current record. After saving the record most editing programs will clear the fields on the screen, display any default values, and position the cursor in the first field. The program is then ready to add an new record or search for an existing record using the Find, Next or Previous Record keys. Typically the Save Record key is the F3 key.

Edit Delete Record Key

The Edit Delete Record key is used by most editing programs to delete an existing record. If no record is available the key has no effect. After deleting the record most editing programs will clear the fields on the screen, and position the cursor in the first field. The program is ready to add a new record or search for an existing record using the Find, Next, or Previous Record keys. Typically the Delete Record key is the F4 key.

Edit Find Record Key

The Edit Find Record key is used by most editing programs to find an existing record. It uses the index associated with the field the cursor is positioned in. If field has no associated index the program will display an error message and take no action. The program will find the first record greater than or equal to the data entered into the field. If no record is found the fields are cleared and the cursor is positioned in the first field. The program is then ready to add a new record or search for another existing record using the Find, Next, or Previous Record keys.

After finding the record the program will display the record and position the cursor in the same field. Typically the Find Record key is the F5 key.

Edit Next Record Key

The Edit Next Record key is used by most editing programs to find the next existing record. It uses the index associated with the field the cursor is positioned in. If field has no associated index the program will display an error message and take no action. The program will find the first record greater than the data entered into the field. If no record is found the fields are cleared and the cursor is positioned in the first field. The program is then ready to add a new record or search for another existing record using the Find, Next, or Previous Record keys.

After finding the record the program will display the record and position the cursor in the same field. Typically the Find Record key is the F6 key.

Edit Previous Record Key

The Edit Previous Record key is used by most editing programs to find the existing record less than the current record. It uses the index associated with the field the cursor is positioned in. If field has no associated index the program will display and error message and take no action. The program will find the first record less than the data entered into the field. If no record is found the last record in the index is found.

After finding the record the program will display the record and position the cursor in the same field. Typically the Previous Record key is the F7 key.

Edit Jump to Field Key

The Edit Jump to Field key is used in editing programs to allow the user to move directly to another field without having to go through the intervening fields. It uses the Jump field in the Edit Dictionary to determine which field to go to. If no jump field is defined no action is taken by the program. Typically the Jump to Field key is the F9 key.

Edit New Window Key

If an editing program has more fields than can be displayed on one screen or edits more than one database at a time the New Window key will allow the user to bring up another window with fields to be changed or added. If there are no other windows available the program will take no action when the key is pressed. Typically the New Window key is the F10 key.

When you have entered the keys the following menu will appear on the screen (Figure H.9).

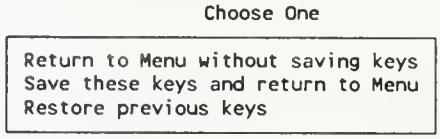


Figure H.9. Options after Entering Editing Keys

If you like the editing keys save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen (Figure H.1).

USER KEYS

The User keys are not used in the Data Directory report programs. They may be used in other programs written for. The discussion below is provided for your information only.

If you want to change the User keys use the arrow keys to highlight the **Modify User Keys** option. When you press Enter a screen similar to the following screen will appear (Figure H.10).

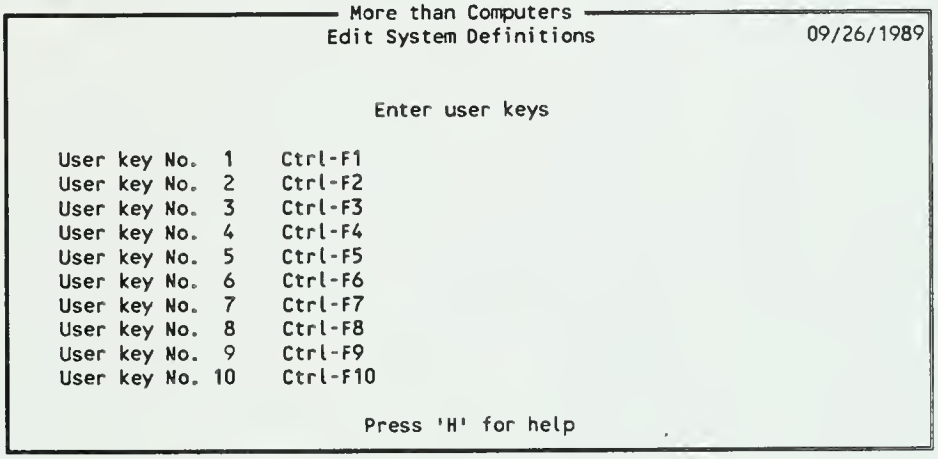

More than Computers
Edit System Definitions
09/26/1989
Enter user keys
User key No. 1 Ctrl-F1
User key No. 2 Ctrl-F2
User key No. 3 Ctrl-F3
User key No. 4 Ctrl-F4
User key No. 5 Ctrl-F5
User key No. 6 Ctrl-F6
User key No. 7 Ctrl-F7
User key No. 8 Ctrl-F8
User key No. 9 Ctrl-F9
User key No. 10 Ctrl-F10
Press 'H' for help

Figure H.10. Enter User Keys

System User Keys are keys that can be used by a program to perform special functions. Unlike the System and Edit Keys their function can change from program to program. Most programs do not use the User Keys. Up to ten User keys can be defined. Press a key for each User key. They are typically the Control-F1 through the Control-F10 keys.

Description	Default Value
User Key 1	Ctrl-F1
User Key 2	Ctrl-F2
User Key 3	Ctrl-F3
User Key 4	Ctrl-F4
User Key 5	Ctrl-F5
User Key 6	Ctrl-F6
User Key 7	Ctrl-F7
User Key 8	Ctrl-F8
User Key 9	Ctrl-F9
User Key 10	Ctrl-F10

When you have entered the keys the following menu will appear on the screen (Figure H.11).

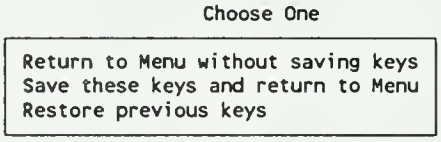


Figure H.11. Options after Entering Editing Keys

If you like the user keys save them by choosing the second menu item. If you do not, choose either of the other two options. You will return to the opening screen (Figure H.1).